Annals of Botany Page 1 of 124
doi:10.1093/aob/mcq258, available online at www.aob.oxfordjournals.org

ANNALS OF BOTANY
Founded 1887

Nuclear DNA amounts in angiosperms: targets, trends and tomorrow

M. D. Bennett* and I. J. Leitch

Jodrell Laboratory, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, UK
** For correspondence. E-mail: i.leitch@kew.org*

Received: 25 August 2010 Returned for revision: 18 October 2010 Accepted: 24 November 2010

CONTENTS

• *Background and Aims* The amount of DNA in an unreplicated gametic chromosome complement is known as the C-value and is a key biodiversity character of fundamental significance with many practical and predictive uses. Since 1976, Bennett and colleagues have assembled eight compilations of angiosperm C-values for reference purposes and subsequently these have been pooled into the Angiosperm DNA C-values Database (http://data.kew.org/cvalues/). Since the last compilation was published in 2005, a large amount of data on angiosperm genome size has been published. It is therefore timely to bring these data together into a ninth compilation of DNA amounts.
• *Scope* The present work lists DNA C-values for 2221 species from 151 original sources (including first values for 1860 species not listed in previous compilations). Combining these data with those published previously shows that C-values are now available for 6287 angiosperm species.
• *Key Findings* Analysis of the dataset, which is by far the largest of the nine compilations published since 1976, shows that angiosperm C-values are now being generated at the highest rate since the first genome sizes were estimated in the 1950s. The compilation includes new record holders for the smallest (1C = 0·0648 pg in *Genlisea margaretae*) and largest (1C = 152·23 pg in *Paris japonica*) genome sizes so far reported, extending the range encountered in angiosperms to nearly 2400-fold. A review of progress in meeting targets set at the Plant Genome Size meetings shows that although representation for genera, geographical regions and some plant life forms (e.g. island floras and parasitic plants) has improved, progress to increase familial representation is still slow. In terms of technique it is now clear that flow cytometry is soon likely to become the only method available for plant genome size estimations. Fortunately, this has been accompanied by numerous careful studies to improve the quality of data generated using this technique (e.g. design of new buffers, increased awareness and understanding of problems caused by cytosolic inhibitors). It is also clear that although the speed of DNA sequencing continues to rise dramatically with the advent of next-generation and third-generation sequencing technologies, 'complete genome sequencing' projects are still unable to generate accurate plant genome size estimates.

Key words: DNA C-value, nuclear genome size, Plant DNA C-values Database, flow cytometry.

INTRODUCTION

It has been possible to estimate the amount of DNA in plant and animal nuclei using various methods for over 60 years. Following the discovery of the key role of DNA in biology in 1953 (Watson and Crick, 1953) such research has increased in each successive decade, and this trend has further intensified in the 21st century. These decades saw the loss of many who played key roles in founding and developing this interest [including Hewson Swift (1920–2004), John McLeish (1929–1971), Arnold Sparrow (1914–1976) and Hugh Rees (1923–2009)]. Yet until now the remarkable birth and explosion of genome size data in 'the DNA age' occurred in the scientific lifetime of some individuals who witnessed or experienced the entire development of this field. However, the death of Jim Price (1944–2005 – Arnold Sparrow's postdoctoral student) in 2004, and the retirement of the first author (Mike Bennett – Hugh Rees's postdoctoral student) in 2006 and Johann Greilhuber in 2010 shows that an historic change has begun as the baton passes to generations unborn at the start of the DNA age, whose knowledge of early genome size research reflects written accounts alone, with no further recourse to supplementary first-hand sources. Happily, recent trends noted in this review show that tomorrow's studies of nuclear DNA amounts in angiosperms rest with an enthusiastic new cohort of practitioners focused on carefully improving techniques and data representation to better understand the origin, extent and effects of variation in plant genome size.

As noted by Bennett and Leitch (2005*a*), 'Nuclear DNA amount and genome size (C-value) are important biodiversity characters, whose study provides a strong unifying element in biology with practical and predictive uses'. Of all the major taxonomic groups studied, Bennett and Leitch (2005*a*) noted that angiosperms were probably the most intensively studied. With published prime C-values for over 6280 species now available (Table 1), they remain so today. Indeed, work on plants has played a leading part in the research on the DNA amount in the unreplicated gametic nuclear chromosome complement [defined by Swift (1950) as the 1C-value) of different taxa. [Recently this was defined as the holoploid genome size by Greilhuber *et al.* (2005).]

Easy access to data for these key characters is clearly an important facility. Yet in practice it has often been difficult to know whether a C-value exists for a particular taxon, and if so, where to find it, especially as estimates are widely scattered in the literature or even unpublished. Although small lists of nuclear DNA amounts were published in reviews and research papers as genome size data started to accumulate in the 1960s and 1970s, the first large compilation of DNA amounts for angiosperms, compiled primarily as a reference source, was published in 1976 with data for 753 species from 54 sources (Bennett and Smith, 1976). This noted an intention to publish supplementary compilations for reference purposes at intervals and seven followed (see Table 1).

Increasing accessibility and ease of access to nuclear DNA amounts was made possible through pooling of data in the published reference compilations into one electronic database available on the internet. The Angiosperm DNA C-values Database (release 1), which collated all the data from the first five published compilations (Table 1), went live in April 1997. After several updates, a major new release (3·1) of angiosperm data was combined with databases for gymnosperms, pteridophytes and bryophytes, into the Plant DNA C-values Database (release 1·0) in 2001. This database was further expanded in 2004 (release 3·0) to incorporate not only first values for 628 species not previously listed in the Angiosperm DNA C-values Database, but also, for the first time, DNA amounts for 253 algal species. An additional update of the Plant DNA C-values Database (release 4·0), adding data for over 300 angiosperm species (from Zonneveld *et al.*, 2005), went live in 2005. Release 5·0 of the Plant DNA C-values Database (December 2010) incorporates all the data presented in the Appendix here, and brings the

TABLE 1. *Total numbers of first estimates for angiosperm species and of original references from which they come in nine compilations of nuclear genome size estimates collated for reference purposes since 1976*

Original compilation	No. of first estimates for 'species' in abstract of compilation	No. of prime estimates for species in the Plant DNA C-values Database (release 5·0)	No. of original references in compilation	No. of first estimates per original reference (column 2/4)
1. Bennett and Smith (1976)	753	596†	54	13·9
2. Bennett *et al.* (1982)	240	195†	53	4·5
3. Bennett and Smith (1991)	588	552†	56	10·5
4. Bennett and Leitch (1995)	899	868†	106	8·5
5. Bennett and Leitch (1997)	471	481†	37	12·7
6. Bennett *et al.* (2000)	691	686†	71	9·7
7. Bennett and Leitch (2005*a*)	628	636†	88	7·7
8. Zonneveld *et al.* (2005)	308	308	1	308·0
9. Present work	1860	1974†	151	13·1
Total	6438*	6287*	617	–

* The total number of taxa in the Plant DNA C-values Database (i.e. 6287) is lower by 151 than the total for paper compilations (i.e. total = 6438) because several types of entry included in the latter are omitted from the former. These include: 87 DNA per cell values, 35 genus sp. values where other values for named species in the same genus are included, and 29 values for some varieties of species where values for other varieties of the same species are included.

† The number of prime estimates for species in the Plant DNA C-values Database (release 5·0) (Bennett and Leitch, 2010) may differ from the number of first estimates for species listed in the abstract of paper compilations (column 2) owing to the reallocation of prime status from the first estimate published for a taxon to an estimate published later.

total number of angiosperms with C-value data available in the database to 6287 (http://data.kew.org/cvalues/, Bennett and Leitch, 2010). The database is in a format which can be queried through a variety of search options, thus enabling users to analyse, sort and filter the data, while at the end of each query, the number of records returned together with their summary statistics (i.e. minimum, maximum, mean and standard deviation) are given. In addition taxonomic (i.e. family, higher group, voucher status), cytological (i.e. ploidy level, chromosome number), technical (i.e. method used to estimate genome size) and bibliographic information can be displayed where such data are available.

Compiling the reference lists and, more recently, the electronic databases has clearly been of value, given the scope and range of uses made of them by the science community. An indication of their value can be gleaned from noting that the published compendia listing angiosperm C-values have been cited over 2100 times and over 85 citations for just the seventh compilation (Bennett and Leitch, 2005*a*). In addition, the electronic databases have been cited over 230 times and the total number of hits on the Plant DNA C-values Database is now well over 250 000 (most of which are enquiries for angiosperms).

Particular uses of DNA C-values for individual taxa have been reviewed previously (Bennett *et al.*, 2000; Bennett and Leitch, 2005*a*; Leitch and Bennett, 2007). Together, these resources have clearly continued to provide large samples of data essential for many diverse comparative studies. Recent examples of large surveys include studies of the relationship between genome size and B-chromosomes (Levin *et al.*, 2005), duration of cell cycle (Francis *et al.*, 2008), seed size and mass (Beaulieu *et al.*, 2007*b*), photosynthetic rate (Beaulieu *et al.*, 2007*a*), plant growth form and distribution (Ohri, 2005), leaf cell size and stomatal density (Beaulieu *et al.*, 2008; Hodgson *et al.*, 2010), and patterns of genome size evolution (Leitch *et al.*, 2005, 2009, 2010; Beaulieu *et al.*, 2010).

Variation in genome size has interesting relationships with characters at many levels ranging from the nucleus and cell to tissues and whole organisms (Bennett, 1987; Bennett and Leitch, 2005*c*), and recent work continues to confirm this. For example, relationships between genome size and a range of nuclear characters have been detected in surveys using the Plant DNA C-values Database since 2003. Houben *et al.* (2003) showed that the extent of methylation of histone H3 in euchromatin of plant chromosomes depends on basic nuclear DNA content. Prokopowich *et al.* (2003) found a positive correlation between rDNA copy number and genome size in eukaryotes (Gregory, 2005), whilst Ross-Ibarra (2007) found that genome size is significantly correlated with recombination rate, with changes in genome size explaining a meaningful proportion (approx. 20 %) of variation in this character. In contrast, Barow and Meister (2003) reported that genome size had only a minor, albeit significant, effect on endopolyploidization in seed plants (Barow and Jovtchev, 2007), with other factors such as phylogeny and life strategy having a stronger impact. Similarly, a large-scale analysis of a phylogenetically diverse sample of species failed to find a strong significant relationship between genome size and pollen size (Knight *et al.*, 2010).

Given their ongoing uses as reference sources, the publication of a further supplementary compilation of angiosperm C-values is needed, and indeed, it is overdue. Whereas the first three compilations were published in journals of the Royal Society (London), the five later ones, from 1995 onwards, have all been published in *Annals of Botany*, a decision based, in part, on its wider availability to intended users, especially those in institutions in the USA. *Annals of Botany* (AoB) has played a major role in plant genome size research through its sponsorship of discussion meetings and workshops on plant genomes [at the Royal Botanic Gardens, Kew (RBG, Kew) in 1997, 2003 and 2007, and at the XVII International Botanical Congress held in Vienna, Austria, in 2005]. These led to the publication of three special issues 'Genome size in Plants' (December 1998), 'Plant Genome Size' (January 2005) and 'Plant Genome Horizons – Vistas and Visions' (April 2008). Partly as a consequence of these developments, AoB has played a growing role as a vehicle for research papers on plant genome size and has rapidly become the journal of choice for first publication of significant work. Indeed, Bennett and Leitch (2005*a*) noted that the highest proportion of papers containing C-values were published in AoB – a role maintained until now. Thus, 17 % (15 of the 88) of the original sources cited in Bennett and Leitch (2005*a*) were originally published in AoB, which is similar to 16 % (24 of 151) of the original sources cited in the present compendium. It is also worth noting that in both cases the proportion of first estimates for species (26·7 and 34·7 %, respectively) published in AoB was much higher than the proportion of original sources.

Over the years, the citation impact factor for AoB has risen from 1·127 in 1995 to 3·501 in 2010 and plant genome size papers have contributed strongly to this increase. For example, compilations published in 1995–2000 together have received over 600 citations, while two papers, one on terminology (Greilhuber, 2005) and the other on technique (Doležel and Bartos, 2005), each with over 100 citations, were both among the five most cited papers in AoB published in 2005. Clearly AoB is an important platform to showcase plant genome size research and reference data, and practitioners would be wise to maintain a critical mass of such work to benefit their field into the future.

Extending the range of genome sizes encountered in angiosperms

The minimum and maximum DNA C-values listed in 1972 for *Arabidopsis thaliana* and *Fritillaria assyriaca*, respectively (Bennett, 1972), remained unchanged for over 30 years, although the number of species listed increased more than 15-fold from 273 (Bennett, 1972) to more than 4100 (Plant DNA C-values Database, release 4·0 October 2005). Lower values were claimed for several taxa (including *A. thaliana*), but most of these were discounted or withdrawn later, mainly on technical grounds (Bennett and Leitch, 2005*a*). For example, the very low value for *Cardamine amara* of 1C = 0·051 pg reported by S. R. Band in 1984 as a personal communication to the first author has subsequently been shown to be an underestimate. Three independent

measurements using flow cytometry obtained a value of 1C = 0·24 pg (Bennett and Leitch, 2005*b*).

Nevertheless, data listed in the present work have recently extended the range of values for angiosperms at both ends of the scale. At the lower end, Greilhuber *et al.* (2006) reported convincing C-values much lower than for *A. thaliana* for several Lentibulariaceae species, including 1C = 0·09 pg for *Utricularia gibba*, 0·065 pg for *Genlisea aurea* and a new record minimum angiosperm C-value estimate of 0·0648 pg for *Genlisea margaretae*. This drop in the minimum known C-value was not small, but constituted a remarkable 60 % reduction to well under half the value for *A. thaliana* (0·16 pg). Indeed, Bennett and Leitch (2005*a*) previously discussed what was the lowest C-value for a free-living angiosperm and suggested that the theoretical minimum monoploid genome size (1Cx value) may approach 0·05 pg for a true diploid. The results for *Genlisea* (Greilhuber *et al.*, 2006) confirm this prediction, and should provide a practical rationale and spur for new surveys to see if other taxa have yet lower C-values and approach the suggested theoretical minimum even more closely.

At the other end of the scale, the maximum angiosperm C-value has also increased recently. Zonneveld (2010) reported a 1C-value of 132·5 pg for a hexaploid hybrid *Trillium* × *hagae* ($2n = 6x = 30$; Melanthiaceae), just less than the reported maximum genome size for an animal (133 pg in the marbled lungfish *Protopterus aethiopicus*, Pedersen, 1971). Yet even this has been exceeded in the genus *Paris* (also Melanthiaceae) in which a 1C-value of 152·23 pg for the octoploid *Paris japonica* ($2n = 8x = 40$) was recently estimated by Pellicer *et al.* (2010). This value is 15 % larger than all previous plant genome size estimates and extends the range encountered in angiosperms to nearly 2400-fold.

Such studies illustrate again that we do not yet know the full ranges of basic genome parameters (cf. Bennett, 1998) and confirm the continued need for new surveys of plant DNA C-values, chromosome numbers and ploidy levels to establish their full ranges experimentally.

The need for reference lists

As the data gathered in this compendium have been entered into the Plant DNA C-values Database, it might be asked if publishing them in this form has added value to their electronic listing. Indeed it does, and at various levels ranging from individual values to overviews and reviews of the metadata. For example, given only the numbers published it is puzzling why Schmuths *et al.* (2004) obtained a 1Cx value of 0·206 pg for *A. thaliana* 'Columbia', which was 26 % higher than the value of 0·163 pg for the same species measured using the completely sequenced genome of *Caenorhabditis elegans* as the calibration standard (Bennett *et al.*, 2003). However, this seems clear given the extra information in footnote 'ac' (for original reference number 494). This shows that Schmuths *et al.* (2004) chose *Raphanus sativus* as the internal calibration standard using a 2C-value of 1·38 pg, which they reported had been taken from Doležel *et al.* (1998), rather than the 2C-value estimate for *Raphanus sativus* 'Saxa' of 1·11 pg given by Doležel *et al.* (1992) – a difference of + 24·3 %. [Actually, Doležel *et al.* (1998) reported a mean 2C-value of 1·22 and 1·26 pg for *Raphanus sativus* depending on which species was used as the primary standard.] Had Schmuths *et al.* (2004) used the value of 1·11 pg their estimate for *A. thaliana* 'Columbia' would have been 0·166 pg, and within 2 % of the prime C-value estimate for *A. thaliana* 'Columbia' of 0·163 pg (Bennett *et al.*, 2003). The electronic database lacks such detailed comments but it cites the compendium review to which reference can be made to check if useful extra information is available and analysis provided.

The example above concerns one taxon. However, compendia reviews also provide opportunities to publish results of useful wider comparisons to identify trends, or test perceptions (and correct misconceptions). For example, the compendium papers give overviews of trends in the latest sample of estimates and papers, and report on progress towards reaching milestones and targets in gap filling and in the take up of guidance regarding best practice issued by the GEnome Size Initiative (GESI – Bennett and Leitch, 2005*b*) by the plant genome size community (http://data.kew.org/cvalues/pgsm/#9%20Key%20recommendations). In the past, none of these was routinely included with updates or new releases of the electronic database, but instead may be mentioned there, citing a compendium as the reference for full details. Unlike the Plant DNA C-values Database, compendia also often draw attention to some of the novel and key uses to which DNA C-value metadata have been put, and review the results and conclusions of such studies. Having the collected new data together with such analyses and reviews is a valuable resource providing overviews in the broadest possible context.

However, given the retirement of the first author and the need to update the Plant DNA C-values Database on a more regular basis than in the past, future releases of new data will be uploaded with or without publication of any compendium paper such as this. Thus, the database will continue to be updated and made available on the internet through the website of the RBG, Kew, who are committed to maintaining and managing this important biodiversity resource for the genome size community.

TARGETS IN GENOME SIZE RESEARCH

The present work marks several major milestones in plant genome size research which concern both quantitative and qualitative aspects of the DNA C-value data. The compendium lists DNA C-value estimates for 2221 angiosperm species taken from 151 original references (including first values for 1860 species from 132 sources). Thus, it is by far the largest number of new and novel species' values, and the largest number of new sources, published together, among the nine compendia published since 1976 (see Table 1). So how do the new data contribute to the targets set for plant genome size research?

Meeting targets for species representation

Previous compilations have tracked the annual output of DNA C-value estimates and shown a strong rising trend in the number of total and first estimates since 1960 (Bennett and Leitch, 2005*a*). Updating this analysis to include values

published here (comprising data included in compilations 1–8 and the present Appendix – see Table 1) shows that these trends were strongly maintained. Thus, the mean total number of C-values for angiosperm species per year rose 69 % from 311 in 2000–2004 to 527 in 2005–2008, whilst the mean total number of first values for angiosperm species rose 72 % from 219 in 2000–2004 to 378 in 2005–2008 (Fig. 1). Clearly, encouraging progress towards increasing the representation of angiosperm species with genome size data continues to be made. Indeed the slope of the graph in Fig. 1 shows that the last 3-year period (2005–2008) had the highest rate of genome size data generation for any period analysed since the first plant genome size was estimated in 1950. It is therefore timely to review and assess how far progress has been made towards meeting targets set for increasing species representation for angiosperms.

Bennett and Smith (1976) listed C-values for 753 angiosperm species, and it was not until 1995 that data for 2500 species were available. It was then conservatively estimated that the total number of angiosperm species was about 250 000, thus C-value data were already available for 1 % of species. At the 1997 Angiosperm Genome Size Workshop, with C-values for 2802 species compiled into the Angiosperm DNA C-values Database, a target was set to measure a further 1 % of species (i.e. approx. 2500 species) by 2003. Analysis shows that this target was aspirational, as a review at the Plant Genome Size meeting held in 2003 showed that C-values for only a further 1032 species had been collated, corresponding to just 41 % of the target, although knowledge of further data as yet unpublished and/or collated suggested that approx. 66 % of the target may have been met (Bennett and Leitch, 2005*a*). Nevertheless, the 2003 meeting reset the target to measure a further 2500 species in the next quinquennium (i.e. 2003–2008) and

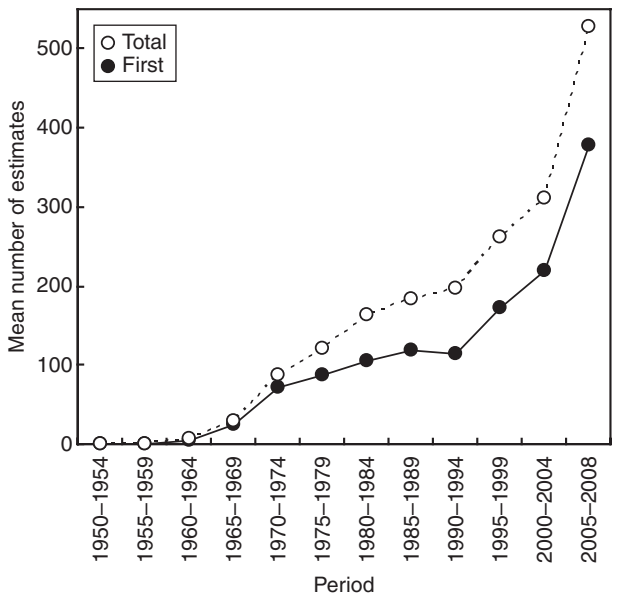

FIG. 1. Mean number per year of total and 'first' DNA C-value estimates communicated in 11 successive 5-year periods and the 4-year period 2005–2008, between 1950 and 2008. Data taken from the Plant DNA C-values Database (release 5·0, December 2010).

analysis shows better progress as the addition of C-values for a further 2155 species compiled over this time frame shows that 86 % of the target was met.

However, recently the total number of angiosperm species has been revised upward to a widely accepted 352 000 (Paton *et al.*, 2008). Using this higher value, the percentage of species with C-values still stands at only 1·8 %. Nevertheless, if present rates of data acquisition are maintained, the sample of species for which C-values are listed should reach 2 % (i.e. 7040) and 3 % (i.e. 10 560) of the higher number within about 3 and 12 years, respectively.

Clearly the setting of targets has been invaluable for focusing and improving the representation of species with C-values. It therefore seems reasonable to maintain a target of first C-values for angiosperm species at 2500 for the next 5 years. If rates of data acquisition continue at the same rate then such a goal seems reasonable, but attaining 10 % species representation (i.e. approx. 35 200, the ultimate goal which seemed sensible to Bennett and Leitch, 2005*a*) would still be estimated to take 60–80 years.

Progress towards targets for familial representation

In 1997, C-values were still unavailable for 68 % of angiosperm families recognized by the first Angiosperm Phylogeny Group (APG) classification published in 1998 (APG, 1998). Thus, at the first Angiosperm Genome Size workshop (1997) a goal was set to complete familial representation by 2002. This proved over-optimistic. Progress was initially very slow, as only 12 (1·7 %) of the 691 species' values in the fifth DNA compilation (Bennett *et al.*, 2000) were also first values for families. Nevertheless, new work focused to address the shortfall produced first C-values for over 80 unrepresented families by 2003 (e.g. Hanson *et al.*, 2001*a*, *b*, 2003; Leitch and Hanson, 2002). This increased familial representation to 47·5 % (Bennett and Leitch, 2005*a*), based on C-value data for 217 families out of the 457 families recognized in the revised angiosperm phylogeny (APG II, 2003) (Fig. 2). As this still fell well short of the original target, it was revised down at the Plant Genome Size Meeting held in 2003 to a new goal of 75 % familial representation. Based on the number of families recognized by APG II (2003), this would require the measurement of an additional 114 families.

Analysis of the 1860 first C-values for species listed in the current Appendix shows that only 24 (0·13 %) are also first estimates for families, representing just 21 % of the target of 114 families. Combining these with data in the Plant DNA C-values Database shows that in total there are currently 240 angiosperm families with genome size data. Given that a further revision by the APG (APG III, 2009) now recognizes only 415 families (10 % down on the number recognized in APG II), the current familial representation now stands at 58 %, so progress towards achieving even the reduced target set of 75 % familial representation in the last quinquennium (i.e. 2003–2008) has remained poor. Major factors limiting progress have been discussed previously (Hanson *et al.*, 2003) as has the expectation that such difficulties will intensify as familial representation approaches 100 %. Nevertheless, progress since 2003 has been disappointing in relation to the size and distribution of the shortfall and has again depended

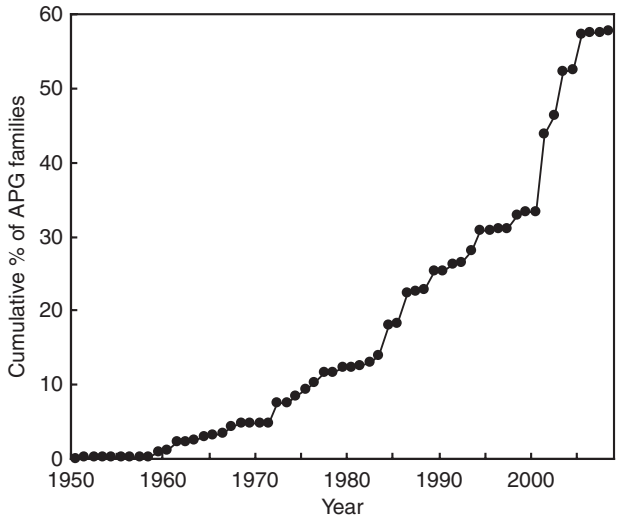

FIG. 2. Cumulative percentage of angiosperm families recognized by the Angiosperm Phylogeny Group (APG) (APG III, 2009) with a first C-value represented in the present Plant DNA C-values Database (release 5·0, December 2010).

mainly on work by just one institution – RBG, Kew [i.e. RBG, Kew, estimated 65 of the 74 (87 %) first values for families added in 1997–2002, and 18 of the 25 (75 %) first values for families added in the present Appendix]. Bennett and Leitch (2005*a*) previously noted that '... international collaboration to locate materials and estimate genome sizes for still unsampled families will be essential if the long term goals of 75 % and then complete familial representation are to be achieved'. Such progress will require champions to focus on this target, collaboration to share the load more broadly and funds for collecting exceptional and esoteric material of the approx. 70 or 175 families still needed for 75 or 100 % familial representation, respectively.

Improved systematic representation for genera

Within the key recommendations for angiosperms set at the Plant Genome Size meeting in 2003 (http://data.kew.org/cvalues/pgsm/#9%20Key%20recommendations) was a target of achieving 10 % generic representation. Although targets for species and familial representation have been set and tracked since 1997, none was set for genera prior to 2003, so 2003–2008 is the first quinquennium for which this target has been monitored. The reason for adding this new level was to reflect developments in the field of angiosperm phylogenetics based on molecular studies. By 2003 the APG had transformed the view of higher order angiosperm phylogeny, bringing new certainty and stability at the familial level and replacing several different conflicting non-molecular systems. Consequently, the focus of new molecular-based work was shifted to the generic level.

Analysis of the 4119 species listed by 2003 showed DNA C-values for 1042 genera, out of the then approx. 14 000 genera recognized (M. Chase, Rotal Botanic Garden, Kew, London, pers. comm.), equivalent to approx. 7·4 % representation overall. Thus, it was calculated that achieving 10 % representation would require a first C-value for an additional approx. 400 genera and so this target was set. Subsequently, the total number of genera was revised down to 12 962 (Mabberley, 2008), which would make achieving 10 % representation easier, requiring a first C-value for only approx. 250 genera. Analysis of the data in the Appendix shows it contains C-values for 554 genera of which 329 (59·4 %) are first C-values for a genus. Overall the 6287 species with genome size data include 1444 genera, an increase of 402 genera since 2003. Thus, work in the last 5 years has made considerable progress towards meeting the generic target, increasing representation to 11·2 %. Indeed, progress towards this target was outstanding, greatly exceeding that at both specific and familial levels noted above. Given the current focus on genera it seems reasonable to keep a similar target of first C-values for a further 450–500 genera over the next 5 years, to enable representation to approach approx. 15 %.

Improved representation of other groups

Although the Plant Genome Size Workshops have noted other gaps in general discussions, they have not set any targets to fill them, choosing to focus first on improved systematic representation in angiosperms, and on widening representation of other plant groups, such as gymnosperms, pteridophytes (i.e. monilophytes and lycophytes), bryophytes and algae. Nevertheless, previous papers in this series have identified particular major gaps in our knowledge of angiosperm C-values (e.g. Bennett and Leitch, 1995, 2005*a*), which merit research (but without recommending targets and time frames). Clearly this was influential as many of these gaps have subsequently received significant attention. For example, Bennett and Leitch (1995) noted that 'estimates were rare for many types of angiosperms such as: palms, parasitic plants, noxious weeds and succulents'. Studies soon addressed some, but not all, of these groups listing first C-values for 74 palms (Röser *et al.*, 1997) and 39 weeds (Bennett *et al.*, 1998).

Although some progress had been made, Bennett and Leitch (2005*a*) noted several ongoing gaps in geographical and plant life form, including 'island floras rich in endemics' and 'taxa from bog, fen, tundra, alpine and desert environments, and halophytic, insectivorous, parasitic, saprophytic and epiphytic species and their associated taxa'. Examining the 151 original references contributing to the Appendix shows they include significant contributions to filling some of the above gaps. Several provide data for island floras. Murray *et al.* (2003, 2005) give genome sizes for 158 endemic and indigenous grasses of New Zealand, whilst Suda *et al.* (2003, 2005) list values for species representing 40 % of the Macaronesian angiosperms. Data for 13 Oncidiinae orchids (Chase *et al.*, 2005) and 18 *Cuscuta* vines (McNeal *et al.*, 2007) have usefully increased representation for epiphytes. The latter, together with estimates for approx. 40 taxa of holoparasitic *Orobanche* (Weiss-Schneeweiss *et al.*, 2005) and for several taxa in two genera of Cistaceae (*Halimium* and *Xolantha*; Boscaiu *et al.*, 2008) have also significantly improved representation for parasitic plants with first values for approx. 70 species. Finally, estimates for four Adriatic seagrasses (Dolenc Koce *et al.*, 2003) and 13 marine halophytes

(Dolenc Koce *et al.*, 2008) have made a positive start in direct response to address a gap identified in Bennett and Leitch (2005*a*).

TRENDS IN TECHNIQUES USED TO ESTIMATE GENOME SIZE

The rise in flow cytometry as the technique of choice for genome size estimations

A continued interest in genome size research has focused on the techniques used to obtain such data. Previous analyses have shown a trend towards the increasing use of flow cytometry since 1983 (Galbraith *et al.*, 1983) to reach 58·4 % of first estimates listed in the seventh compilation (i.e. Bennett and Leitch, 2005*a*). Updating this analysis shows a further strong rise in the use of flow cytometry in recent years, with Feulgen microscopy methods continuing to fall (Fig. 3A). Indeed, of the 1860 first estimates listed in the present Appendix, 84·5 % were made using flow cytometry but only 15·4 % used Feulgen microscopy methods. Dividing the latter into traditional Feulgen microdensitometry and computer-based image analysis (CIA) of Feulgen-stained preparations (Fig. 3B) shows that although the use of CIA generally rose between 2000 and 2006, more recently its use has declined (contributing just 31 C-value estimates in 2007 and 2008, Fig. 3B) along with that of the more traditional Feulgen microdensitometry methods. This trend is not unexpected but reflects the final loss of traditional photomicrodensitometers and the failure to develop a 'standard inexpensive CIA kit, an agreed best practice CIA technique and easy access to leading laboratories for training and technology transfer', conditions which Bennett and Leitch (2005*a*) suggested would be essential for CIA to become the realistic alternative to flow cytometry for estimating C-values. Indeed, CIA has advantages for some materials in providing cytological sights and insights into the material being studied (such as chromosome number, aneuploidy, B-chromosomes and nuclear stability) unavailable to users of flow cytometry without also making separate cytological preparations. Clearly, the use of Feulgen microscopy with CIA has not been favoured by most practitioners in the plant genome size community.

Analysis of data in the Animal Genome Size Database (Gregory, 2006) shows a different picture. Here, 1151 estimates were made using CIA for the period 1991–2009 (compared with 190 in plants). Nevertheless, of the 29 original sources giving such data, 13 (which list data for 549 taxa) were published by T. R. Gregory, so (as with many other aspects of genome size research) this trend has been strongly influenced by the output of just one productive practitioner and his colleagues. In plants, all recent estimates made using CIA were co-authored by Vilhar in Slovenia or come from the University of Vienna where Greilhuber and colleagues use the CIRES system, which is now unavailable to purchase. In view of the above, the use of CIA to estimate plant genome sizes is unlikely to increase again unless manufacturers supply and support complete and inexpensive CIA packages which compete with the options provided by flow cytometry makers. This now seems unlikely given the small size of the genome size market, but could still occur as a marginal use of some equipment made for a different prime use in a larger (e.g. medical) market.

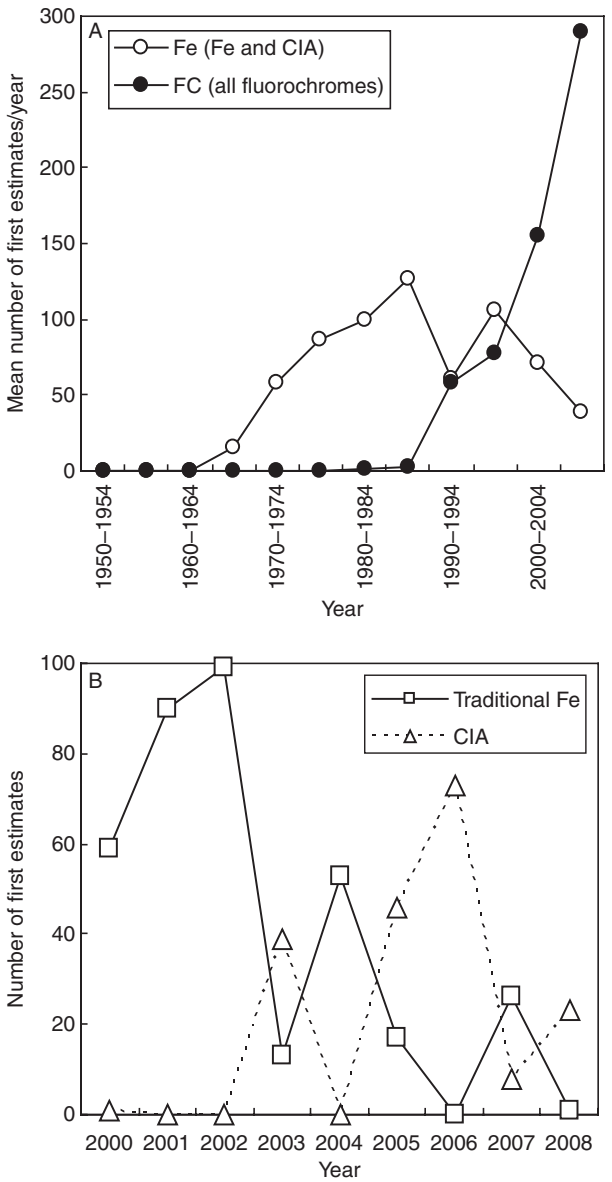

FIG. 3. (A) Mean number per year of 'first' DNA C-value estimates made using Feulgen microdensitometry (Fe) and flow cytometry (FC) communicated in 11 successive 5-year periods and the 4-year period 2005–2008, between 1950 and 2008. (B) Number of first estimates made using traditional Feulgen methods (Traditional Fe) and Feulgen staining measured using computer-aided image analysis (CIA) since 2000. Data taken from the Plant DNA C-values Database (release 5·0, December 2010).

Development of different isolation buffers for flow cytometry

Since 1983, flow cytometry has been increasingly used as a method to estimate genome size (Galbraith *et al.*, 1983), and the composition and number of different types of isolation buffers has grown considerably, reflecting the complex diversity of biochemistry in plant cells. Indeed, in the FLOWer database for plant flow cytometry (Loureiro *et al.*, 2007*b*,

2008) there are 28 different buffers which have been used based on 826 research articles included in the database.

Recently, the performances of four of the most commonly used flow cytometry buffers (Galbraith's, LB01, Otto's and Tris.$MgCl_2$) on seven plant species were compared by Loureiro *et al.* (2006*a*). By analysing various parameters of the flow histogram including forward scatter, side scatter and relative fluorescence intensity of propidium iodide-stained nuclei, the performance of each buffer was assessed. They concluded that no single buffer worked well for all species. Instead, the optimal buffer for a particular species depended on a number of factors, although Otto's and LB01 buffers were considered to be the best for the majority of species analysed. Subsequently, Loureiro and colleagues have developed two new buffers, a general-purpose buffer and one specifically developed for use with woody material (Loureiro *et al.*, 2007*a*).

Two recent studies have extended our understanding on how cytosolic compounds, which are released into the isolation buffer during nuclei isolation, can interfere with fluorochrome staining and lead to erroneous results and pseudo-genome size plasticity (Loureiro *et al.*, 2006*b*; Bennett *et al.*, 2008). Bennett *et al.* investigated the effects of anthocyanin, while Loureiro *et al.* examined tannic acid. Both groups of compounds, which are widespread across angiosperms, were shown to have potent effects on DNA staining leading to stoichiometric errors. Such studies emphasize the need to use internal standardization and the importance of testing for inhibitory compounds as recommended by Doležel (1991) and as more recently discussed in detail by Greilhuber *et al.* (2007).

The application of flow cytometry to plant systematics

With the ability of flow cytometry to analyse large numbers of individuals within and between populations, genome size data are now increasingly being used to help resolve taxonomic issues. These have included examples where genome size has been used to provide new insights into species relationships (e.g. *Agapanthus*, Zonneveld and Duncan, 2003; *Galanthus*, Zonneveld *et al.*, 2003; *Nerine*, Zonneveld and Duncan, 2006; *Curcuma*, Leong-Škornickovà *et al.*, 2007; *Hieracium*, Suda *et al.*, 2007; *Narcissus*, Zonneveld, 2008) as well as for recognizing new taxonomic entities (e.g. *Cochlearia borzaeana*, Kochjarová *et al.*, 2006; *Pandanus fascicularis*, Panda *et al.*, 2009), supporting existing ones (e.g. *Lilium bosniacum*, Muratovic *et al.*, 2005) or rejecting them (e.g. *Lamium endtmannii*, Rosenbaumová *et al.*, 2004).

Genome size has also been used as a reliable guide in the separation of closely related species and their hybrid such as shown in studies of *Elytrigia repens*, *E. intermedia* and their hybrid (Mahelka *et al.*, 2005) (original reference 593 in the Appendix). Mahelka *et al.* (2005) analysed 238 individuals from 55 different populations and found that there was so little intraspecific variation in DNA amount for each of the two species and the hybrid that genome size could be used as a reliable taxonomic indicator. Indeed, genome size was shown to be more robust and less subjective than morphological characters that varied more or less continuously between the species and hybrid.

Recent developments in the application of flow cytometry to genome size studies

(i) *The use of seeds.* Recent reports suggest that dry seeds may be suitable material for genome size estimations made using flow cytometry (Sliwinska *et al.*, 2005, 2009; Jedrzejczyk and Sliwinska, 2010). This approach, if shown to be widely applicable, has several advantages: (1) it enables the direct analysis of seed stored in seed banks (provided the owners of the genetic resources approve), (2) it overcomes the problems associated with analysing fresh material collected in the field within a reasonable time frame before material has degraded, and (3) it provides an alternative source of tissue for analysis if the accumulation of staining inhibitors in other tissues has been shown to be problematic. Indeed, dry seed may contain a lower level of cytosolic inhibitors than other parts of the plant and hence may be easier to analyse (Greilhuber *et al.*, 2007). However, there is the potential that the seeds are intra- or inter-specific hybrids rather than representing the genomic make-up of the parent. In addition, using whole seeds for genome size studies means that all the material is destroyed, thereby preventing further genomic analysis (chromosome counts etc.). An alternative approach is to germinate the collected seed and analyse the growing plant material. In a large survey of the Macronesian flora by Suda *et al.* (2005) such an approach was taken. Seeds for over 100 taxa were collected from the Canary Islands during fieldwork and then brought back to the Czech Republic for germination and subsequent flow cytometric and cytological analysis.

(ii) *Ease of access to methodological data.* The launch of the FLOWer database (Loureiro *et al.*, 2007*b*, 2008) in 2007 has provided a valuable resource enabling users of flow cytometry to access and assess details of the protocols used by other practitioners to assist them in choosing the most likely method for analysing the plant species of interest.

(iii) *New equipment.* Another development which may assist in extending the ease of genome size analysis includes the launch of a new type of flow cytometer, the Accuri C6, by Accuri Cytometers in December 2006 (www.AccuriCytometers.com). The company promised a revolution in flow cytometry with 'reliable, high performance fluidics, inexpensive, robust optics, and sophisticated and simplified electronics' – all for approx. £30 000. One of the main differences between such a machine and conventional flow cytometers such as those of Partec, Beckman Coulter or Beckton Dickinson is the greater dynamic range of operation (as it uses a 24-bit analog-to-digital converter for signal processing), enabling species with widely different genome sizes to be analysed together in a single sample. Indeed, tests on the machine carried out by Galbraith (2009) have demonstrated that species with 1C-values ranging from 0·16 to 40 pg can be visualized and analysed on the same flow histogram. Galbraith demonstrated that the machine had the potential to measure genome sizes in species with C-values ranging from 0·032 to 185 pg and hence was unlikely to be limited by this character. Galbraith concluded that 'for routine analysis of plant nuclear DNA contents, ploidy or investigations of other issues requiring C-value

determinations, the Accuri C6 flow cytometer provides an excellent platform'. He also suggested that given the reproducibility and simplicity of use it might now be feasible to realistically consider estimating genome sizes in the remaining 98 % of angiosperm species (Galbraith, 2009). Nevertheless, although Galbraith considered that it might be possible to estimate genome sizes in 12 species per hour, in reality he also recognized that potential problems arising from the need to optimize buffers and test for secondary products would inevitably slow things down. In addition, the need to make chromosome counts will further impede output – a factor often omitted by flow cytometer practitioners when extolling the greater speed of flow cytometry compared with Feulgen microscopy. Nevertheless, the availability of such a compact, inexpensive, yet easy to use machine is likely to make an impact in the field of genome size research as older, more traditional flow cytometers are replaced and updated.

Are there any new techniques for estimating genome size on the horizon?

Since the 1950s, nuclear DNA amounts have been estimated by at least eight different techniques, including: chemical extraction, Feulgen microdensitometry, flow cytometry, CIA, reassociation kinetics, pulse field gel electrophoresis and 'complete' genome sequencing. From an analysis of all the genome size data in the Plant DNA C-values Database and as noted above, just two (Feulgen microdensitometry and flow cytometry) have contributed over 96 % of first estimates for angiosperm species and it seems clear that flow cytometry will remain the dominant method of choice for estimating DNA C-values in plants in the near future. Indeed, it may become almost the sole method unless CIA or some new method takes off. So are there any realistic alternatives on the horizon?

(i) *Can real-time PCR be used for estimating plant genome sizes?* In 2003, a molecular-based method to estimate genome size was published which used the quantitative real-time polymerase chain reaction (qPCR) (Wilhelm *et al.*, 2003). The method required (1) a cloned single copy gene from the species of interest and (2) an accurate method to estimate concentration of genomic DNA. qPCR was then performed and genome size calculated by dividing the amount of DNA present in the sample by the number of copies of the single copy gene detected. The method has since been used to estimate genome sizes in several eukaryotic species with genomes up to 2900 Mb. However, comparisons with estimates made using other methods have not always produced similar results (Table 2) and reasons for the discrepancies remain unclear. Recent modifications to the technique may overcome some of the initial problems identified (e.g. Jeyaprakash and Hoy, 2009), but given that (1) considerable time is required to optimize conditions for qPCR and (2) prior molecular knowledge is needed to identify suitable, specific primers for amplifying a unique sequence, whether the method is widely applicable remains unknown even for species with small genomes. Moreover, there are as yet no data to demonstrate how accurate the method is for genomes larger than 3000 Mb.

Indeed, the general suitability of the method for angiosperms remains unclear as there are no reports of plant genome size estimations using qPCR. Nevertheless, given (1) the propensity of plant genomes to undergo both localized and whole genome duplications and (2) the need to empirically select a suitable single copy gene and develop appropriate primers for each species investigated, it seems unlikely the method will be widely used. It is too time consuming and expensive even if it can be shown to work across the spectrum of genome sizes encountered in plants.

(ii) *Will 'complete' genome sequencing give useable genome size estimates?* It is now 10 years since the first complete genome sequence for an angiosperm was published (Arabidopsis Genome Initiative, 2000), and to date similar data for a further eight angiosperm species has followed (Table 3). It is therefore timely to assess the actual contribution that complete genome sequencing has made to our knowledge of plant DNA C-values, and to ask if this molecular approach has yielded more accurate genome size measurements than were previously available, and thereby provided the new 'gold standard' calibration standards against which other species can be compared. Bennett and Leitch (2005*a*) discussed

TABLE 2. *Comparison of genome sizes estimated by quantitative real-time PCR (qRT-PCR) with other methods for various eukaryotic species (PFGE, pulse field gel electrophoresis; FC, flow cytometry; Fe, Feulgen microdensitometry; RK, reassociation kinetics; Ch, chemical determination).*

Species	Group	1C value estimated using qRT PCR	Reference	Range of 1C values estimated by other methods*
Saccharomyces cerevisiae (yeast)	Fungus	12·1 Mb	Wilhelm *et al.* (2003)	12·06–12·2 Mb (complete genome sequencing)[1]
Piriformospora indica	Fungus	15·6–24 Mb (depending on gene used)	Zuccaro *et al.* (2009)	15·7 Mb (PFGE)[2]
Thalassiosira pseudonana	Diatom	35·9 Mb	von Dassow *et al.* (2008)	31·3 Mb (complete genome sequencing)[3]
Musca domestica (house fly)	Insect	295 Mb	Gao and Scott (2006)	950 Mb (spectrophotometry)[4], 900 Mb (FC)[5]
Drosophila melanogaster (fruit fly)	Insect	184 Mb	Gao and Scott (2006)	157–206 Mb (FC)[4]
Xiphophorus maculatus (platyfish)	Fish	550 Mb	Wilhelm *et al.* (2003)	410–550 Mb (Fe, RK)[6], 760–990 Mb (FC)[4]
Homo sapiens (human)	Mammal	2900 Mb	Wilhelm *et al.* (2003)	2940 Mb (Ch)[7] to 3355 Mb (Ch)[8]

* [1]Fungal Genome Size Database (Kullman *et al.*, 2005); [2]Zuccaro *et al.* (2009); [3]Armbrust *et al* (2004); [4]Animal Genome Size Database (Gregory, 2006); [5]J. S. Johnston (Texas A&M University, pers. comm., 2008); [6]Wilhelm *et al.* (2003); [7]Vendrely and Vendrely (1948); [8]Mandel *et al.* (1950).

TABLE 3. *Comparison between the amount of DNA sequenced and total genome size in 'complete' plant genome sequencing projects*

Species[‡]	Total genome size reported by the 'complete' genome sequencing project (1C-value in Mbp)	Actual amount of assembled sequence generated by the 'complete' genome sequencing project (Mbp)	Percentage of genome estimated to have been sequenced (column 3/ column 2)	1C-value estimated by other methods	Comments
Arabidopsis thaliana 'Columbia'[1] (Arabidopsis) Family Brassicaceae	125[†]	115·4	92 % assuming a 1C-value of 125 Mb but actually only 73·5 % if the higher 1C-value of 157 Mb is used	157 Mb using FC:PI and *Caenorhabditis elegans* as standard (1C = 100 Mb) (Bennett *et al.*, 2003)	A 1C-value of 125 Mb given by the Arabidopsis Genome Initiative was based on adding 115·4 Mb of assembled sequence to an estimate of 10 Mb for the unsequenced centromeres and ribosomal DNA regions (Arabidopsis Genome Initiative, 2000).
Oryza sativa subsp. *indica* '93-11'[2] (Rice) Family Poaceae	466[†]	362	77·6 %	510 Mb using Fe and *Vigna radiata* (1C = 0·53 pg) (Bennett and Smith, 1991)	Yu *et al.* (2002) estimated that the repetitive sequences which were difficult to align accounted for 104 Mb of DNA. When added to the total amount of aligned sequence data this gave an estimated genome size of 466 Mb as stated in column 2.
Oryza sativa subsp. *japonica* 'Nipponbare'[3] (Rice)	420*	389·8	n/a	510 Mb using Fe and *Vigna radiata* (1C = 0·53 pg) (Bennett and Smith, 1991)	No attempt was made to estimate a total genome size. Instead, a 1C-value of 420 Mbp was listed by Goff *et al.* (2002 – Syngenta group) although the source of this value, and hence how it was determined, was not stated.
Oryza sativa subsp. *japonica* 'Nipponbare'[4] (Rice)	389[†]	370	95 %	510 Mb using Fe and *Vigna radiata* (1C = 0·53 pg) (Bennett and Smith, 1991)	This work built on that of Syngenta (see above, Goff *et al.*, 2002) to produce a higher quality sequence estimated to comprise 95 % of the whole genome, including all the euchromatic regions. The 1C-value of 389 Mbp was based on adding the estimated length of 62 gaps (= 18·1 Mb), which included nine centromeres and 17 telomeres to the total length of aligned sequence (= 370 Mb).
Populus trichocarpa genotype 'Nisqually 1'[5] (black cottonwood) Family Salicaceae	485[†] ± 10	410	85 % of total genome but approx. 90 % of euchromatic region	686 Mb using FC:DAPI and chicken red blood cells as standard (1C = 1·21 pg) (Bradshaw and Stettler, 1993)	The authors considered that the 410 Mb of assembled sequence data represented the euchromatic portion of the genome. The total genome size was based on adding this to 75 Mb of genomic sequence that could not be assembled into any of the major scaffolds. The authors suggested this was consistent with cytogenetic evidence showing approx. 30 % of the genome was heterochromatic. This was based on DAPI staining of seven prophase and metaphase cells followed by physical measurements of heterochromatic bands (NB: adjustments were made for the differential contraction of heterochromatin versus euchromatin).
Vitis vinifera genotype PN40024[6] (grapevine) Family Vitaceae	475*	487	See comments	415 Mb using FC:PI and chicken red blood cells as standard (Lodhi and Reisch, 1995)	No attempt was made to estimate a total genome size. Instead, the 1C-value of 475 Mb given by the French-Italian Public Consortium for Grapevine Genome Characterization (2007) was taken from Lodhi and Reisch (1995). Actually, this figure comes from the abstract of Lodhi and Reisch who stated that 'the *Vitis* genome size is 475 Mb' based on measurements for 19 species including *V. vinifera*. The measurements of Lodhi and Reisch were made using flow cytometry and chicken red blood cells as standard (assuming 2C = 2·33 pg) and showed there was intraspecific variation between different varieties of *Vitis vinifera* ranging from 1C = 415 to 511 Mb. The cultivar 'Pinot Noir', which is closest to the variety used for genome sequencing, was estimated to have a genome size of 415 Mb.

					The additional 12 Mb of DNA in their assembled sequence of 487 Mbp compared with their reported genome size of 475 Mb was considered to represent 'remaining heterozygosity'.
Carica papaya 'SunUp'[7] (Papaya) Family Caricaceae	372*	271	73 %	392 Mb using Fe and *Vigna radiata* (1C = 0·53 pg, Bennett and Smith, 1991)	No attempt was made to estimate a total genome size. Instead, the genome size was taken from Arumuganathan and Earle (1991*a*) who estimated the 1C value to be 372 Mb by FC:PI using chicken red blood cells as standard (2C = 2·33 pg) and a conversion factor of 1 pg = 965 Mb. Ming *et al.* (2008) noted that papaya chromosomes contained 'highly condensed heterochromatic regions which could represent 30 – 35 % of the genome DNA' and that 'a large proportion of the heterochromatic DNA was probably not covered by the whole genome sequence. They therefore concluded that the 271 Mbp of assembled sequence represented only about 75 % of the genome but more than 90 % of the euchromatic regions.
Cucumis sativus var. *sativa* 'Chinese long' inbred line 9930[8] (cucumber) Family Cucurbitaceae	367*	243·5	66 %	504 Mb using FC:PI and *Raphanus sativus* (1C = 0·69 pg) (Barow and Meister, 2003)	No attempt was made to estimate a total genome size. Instead the value used by Huang *et al.* (2009) to estimate the percentage of genome sequenced was taken from Arumuganathan and Earle (1991*a*) made using FC with chicken red blood cells as standard (2C = 2·33 pg) and a conversion factor of 1 pg = 965 Mb). Huang *et al.* (2009) assumed that the difference between the amount of aligned sequence data (i.e. 243·5 Mb) and the genome size estimate of Arumuganathan and Earle (1991*a*) comprised heterochromatic satellite or rRNA sequences that were to be found in the remaining 30 % of unassembled sequence data. NB: *Cucumis sativa* is the first plant to have its genome sequenced using a hybrid approach combining Sanger sequencing with Illumina GA sequencing (= next-generation sequencing). This involved the construction of a reference genome (with a 3·9-fold coverage) to take advantage of the long reads and clone length of the traditional Sanger technique. The high-throughput Illumina technology, which generated short reads approx. 50 bp long, was then used to give high sequencing depth (68·3-fold coverage) with low unit cost.
Sorghum bicolor genotype BTx623[9] (sorghum) Family Poaceae	730†	697·6	96 %	818 Mb using FC:PI and *Arabidopsis thaliana* (1C = 157 Mb, Price *et al.*, 2005)	The source of the assumed total genome size of 730 Mb cited by Paterson *et al.* (2009) in their introduction is unclear although it probably represents the sum of the assembled sequence data (697·6 Mb) and the unassembled sequence scaffolds, which were estimated to comprise 34·94 Mb and considered to be located in the centromeric regions (see suppl. info. to Paterson *et al.*, 2009).
Zea mays line B73[10] (maize) Family Poaceae	2300*	2048	89 %	2646 Mb using Fe and *Hordeum vulgare* (1C = 5·56 pg, Bennett and Smith, 1991)	Schnable *et al.* (2009) estimated that approx. 10·8 % of the maize genome was missing from assembled sequence data based on the genome size of maize taken from Rayburn *et al.* (1993), which was made using FC:DAPI (NB: the fluorochrome DAPI is no longer recommended for genome size estimations because it preferentially binds to AT-rich regions of the genome leading to inaccurate data, Doležel *et al.*, 2007). Of the approx. 250 Mb of 'missing' DNA, 60

Continued

TABLE 3. *(continued, the superscript letters refer to notes preceding this table)*

Species‡	Total genome size reported by the 'complete' genome sequencing project (1C-value in Mbp)	Actual amount of assembled sequence generated by the 'complete' genome sequencing project (Mbp)	Percentage of genome estimated to have been sequenced (column 3/ column 2)	1C-value estimated by other methods	Comments
					Mb was considered to comprise tandem repeats (e.g. knob 180 bp repeats and CentC repeat).
Brachypodium distachyon inbred line Bd21[11] (brachypodium) Family Poaceae	272†	270	99·6 % (see comments)	343 Mb using FC:PI and rice (1C = 490 Mb, Bennett and Leitch, 2005*a*)	The International *Brachypodium* Initiative (2010) used a whole genome shotgun strategy to sequence the genome of *B. distachyon*. They were able to align 270·1 Mb of sequenced nucleotides to create five chromosome scale pseudomolecules. They also estimated that gaps corresponded to approx. 1·1 Mb to give a genome size of 272 Mb. Interestingly, they noted that the total genome size fell within the range measured by FC, citing Bennett and Leitch (2005*a*) and Vogel *et al.* (2006). However, Bennett and Leitch (2005*a*) actually reported a 1C-value of 343 Mb using rice as a standard with a 2C DNA amount of 1·01 pg while Vogel *et al.* (2006) measured the same inbred line used for sequencing and reported 1C = 431 Mb using chicken red blood cells (2C = 2·33 pg) as the standard. It is thus unclear how the genome size of 272 Mb falls within these values. Furthermore, this calls into question the statement given by the International *Brachypodium* Initiative that the sequence generated corresponds to a 'near-complete genome'!

FC:PI, flow cytometry using propidium iodide; FC:DAPI, flow cytometry using DAPI; Fe, Feulgen microdensitometry.

* Total genome size taken from the literature where known (for source of data see 'Comments' column).

† Total genome size estimated from the sequencing data generated (see 'Comments' for how it was derived).

‡ [1]**Arabidopsis Genome Initiative. 2000.** Analysis of the genome sequence of the flowering plant *Arabidopsis thaliana. Nature* **408**: 796–815. [2]**Yu J, Hu SN, Wang J, *et al.* 2002.** A draft sequence of the rice genome (*Oryza sativa* L. ssp. *indica*). *Science* **296**: 79–92. [3]**Goff SA, Ricke D, Lan TH, *et al.* 2002.** A draft sequence of the rice genome (*Oryza sativa* L. ssp. *japonica*). *Science* **296**: 92–100. [4]**International Rice Genome Sequencing Project. 2005.** The map-based sequence of the rice genome. *Nature* **436**: 793–800. [5]**Tuskan GA, DiFazio S, Jansson S, *et al.* 2006.** The genome of black cottonwood, *Populus trichocarpa* (Torr. & Gray). *Science* **313**: 1596–1604. [6]**French-Italian Public Consortium for Grapevine Genome Characterisation. 2007.** The grapevine genome sequence suggests ancestral hexaploidization in major angiosperm phyla. *Nature* **449**: 463–467. [7]**Ming R, Hou S, Feng Y, *et al.* 2008.** The draft genome of the transgenic tropical fruit tree papaya (*Carica papaya* Linnaeus). *Nature* **452**: 991–996. [8]**Huang S, Li R, Zhang Z, *et al.* 2009.** The genome of the cucumber, *Cucumis sativus* L. *Nature Genetics* **41**: 1275–1281. [9]**Paterson AH, Bowers JE, Bruggmann R, *et al.* 2009.** The *Sorghum bicolor* genome and the diversification of grasses. *Nature* **457**: 551–556. [10]**Schnable PS, Ware D, Fulton RS, *et al.* 2009.** The B73 maize genome: complexity, diversity, and dynamics. *Science* **326**: 1112–1115. [11]**The International Brachypodium Initiative. 2010.** Genome sequencing and analysis of the model grass *Brachypodium distachyon. Nature* **463**: 763–768.

these questions based on data for just two species (arabidopsis and rice). Five years on, now based on data for nine species, their conclusions are confirmed and amplified below.

When the first 'complete' genome sequence for a plant was announced in 2000 [i.e. *A. thaliana* (arabidopsis)] there were indeed hopes that this might herald a new era in genome size studies, providing the first accurate genome size value for a plant based on the total number of base pairs comprising the genome. Indeed, the publication of a truly complete genome sequence for the nematode *Caenorhabditis elegans* suggested that such a goal might be feasible (*C. elegans* Sequencing Consortium, 1998). Nevertheless, it soon became clear that in plants, as with other eukaryotes sequenced at the time, what was considered to be a 'complete' genome sequence actually represented a combination of DNA sequence information for all or at least most of the euchromatic portion of the genome together with an estimate of the amount of DNA in the heterochromatic part of the genome (Bennett *et al.*, 2003; Bennett and Leitch, 2005*a*). This compromise arose largely due to problems associated with sequencing highly repetitive regions of the genome. Thus, as noted by Bennett *et al.* (2003), the first release of the arabidopsis genome in 2000 actually included sequence data for only 115·4 Mb of the genome together with a rough estimate of 10 Mb for the unsequenced regions to give a total genome size of 125 Mb (Arabidopsis Genome Initiative, 2000). This contrasted with a carefully conducted study by Bennett *et al.* (2003) who estimated the genome size of arabidopsis to be 157 Mb using flow cytometry and *C. elegans* as the calibration standard – approx. 25 % larger than the estimate based on complete genome sequencing.

Neither is the situation for arabidopsis unique. As the number of 'complete' genome sequences for plants has risen it is clear that many include estimates for the difficult-to-sequence repetitive regions of the genome and that the 'complete' genome size quoted in the publication is either based on adding the assembled and unassembled sequence data together (e.g. *Populus trichocarpa*) or just taken from the literature (e.g. *Vitis vinifera*). Even for one of the most recent 'complete' genome sequences, *Sorghum bicolor* (Paterson *et al.*, 2009), the researchers were unable to align all the DNA that had been sequenced, with the main problems arising in the centromeric regions. Consequently, their total size had to be estimated based on an assumed average centromere size of 4·8 Mb for each chromosome. In total, the assembled genome sequence comprised 697·6 Mb, while the total genome size was given as approx. 730 Mb, based on an estimate of the amount of unassembled DNA (see Table 3).

Clearly, although the amount of DNA sequence generated from such large-scale sequencing projects is impressive and the information obtained is immense, whole genome sequencing using current approaches continues to be unsuitable for providing accurate genome size estimates (Doležel and Greilhuber, 2010; Suda and Leitch, 2010). Indeed, given the above discussion two important points are noted:

(1) Complete genome sequencing has so far failed to produce a C-value for any angiosperm species which is more accurate than the prime value for that species previously estimated using non-molecular methods. Genome size estimates from complete genome sequencing should therefore not be used in preference to the prime value already listed in the compilations and the Plant DNA C-values Database.

(2) Nevertheless, 'complete genome sequencing' has produced a highly accurate measurement of a minimum amount of DNA below which the real C-value cannot fall.

It is noted that the advent of next-generation (e.g. 454 LIFE Sciences, Solexa, SOLiD, Illumina and Helicos) and third-generation (e.g. Pacific Biosciences SMRT, Oxford Nanopore, Life Technologies FRET platform and the Ion Torrent Systems; Munroe and Harris, 2010) sequencing technologies are already revolutionizing the speed at which sequence data can be generated (Rusk, 2009; Martinez and Nelson, 2010). However, currently they seem unlikely to offer a way forward for generating accurate genome size estimates as the assembly of repetitive sequence data is still problematic, particularly for sequencing technologies which produce very short reads (i.e. approx. 100-bp lengths) such as those of Solexa, SOLiD and Helicos. Ways to overcome such problems are being developed (e.g. Rounsley *et al.*, 2009) by combining the speed of these methods with traditional physical mapping technology. Indeed, these approaches may eventually provide the way forward to more completely sequenced genomes. Nevertheless, truly complete genomes and hence accurate genome size measurements still seem overoptimistic expectations, at least for the forthcoming decade.

TOMORROW

We have previously reviewed the main interests and opportunities of plant genome size research (Bennett and Leitch, 2005*a*, *b*) and identified several important aspects of progress, problems and prospects in the field over a 10-year horizon. Five years on it is timely to monitor those ideas, and to ask if mid-course corrections in aims and expectations are needed. Clearly, the field remains important and interest and activity in it continues to expand. The sections above outline both substantial progress on the expected trajectories as well as some major expected shortcomings. Most of the views and concerns we previously outlined remain valid, so changing them would be premature, although some can be usefully amplified here, especially a few key problems whose solutions require urgent imminent action.

The field occupies an important position at the interface of several concerns and can be expected to attract and generate further growth in the coming decade. Nevertheless, it is probably at a critical junction, where the extent to which such opportunities are grasped will depend on how genome size research is funded and coordinated in future.

The main aims of plant DNA C-value research seem unlikely to change over the next decade. Thus, the 2020 vision for the field is to maximize the quantity and quality of genome size estimates available, and to increase accessibility to and ease analysis of such data. Attention to data quality will remain focused on increasing its accuracy via better calibration standards and techniques and by improving its broad

representation of the global angiosperm flora. At the same time, looking behind and beyond DNA C-value numbers will further explore the molecular mechanisms responsible for variation in, and stabilization of, genome size within and between taxa, and of the time frames over which they can operate. Other work is likely to extend investigations of the uses and consequences of genome size data to increase knowledge and understanding of the biological significance of genome size information, and thereby to increase our knowledge of its uses as a predictor.

Forty-two years ago, when the first author began estimating DNA C-values in crop and related species at the Plant Breeding Institute Cambridge, UK, genome size estimates were known for approx. 200 angiosperms. Today the sample has increased 30-fold with estimates for 6287 species. So how has this been achieved? Progress in science is of several types. Much is directed within formal programmes which set goals and award funds for approved projects. In contrast, some research occurs outside this framework, undertaken by individuals with interests and opportunities to focus on it. The development and growth of knowledge of genome sizes in angiosperms is a prime example of the latter. The topic has never been formally identified as a particular goal by any committee or programme, nor allocated a specific budget (although a few grants for projects which include genome size estimations have been approved under general programmes). Thus, hitherto the expansion in genome size knowledge and understanding has developed mainly as a by-product of other research, or as an interest of individuals working on other projects or independently. Although the topic is now seen as a key mainstream strand of holistic genomics, it is still unclear how continued progress in the field will be funded. It seems likely that some future work will continue to generate first estimates for a few hundred taxa each year, driven and mainly undertaken by the interests and opportunities of a few enthusiasts, but with some informally recommended targets and monitoring. However, a real alternative to increase the flow of first estimates by several orders of magnitude could be through a formally coordinated approach, with targets set as part of a holistic genomics programme with broad (international) funding. Indeed, the development of modern technology and availability of new plant collections in combination with international collaborations provide a unique opportunity with the potential to achieve vastly improved representation of the global flora for a modest investment. An exploration of whether this can be funded through ongoing projects such as the iPlant Tree of Life (iPTOL) would be timely.

Ways in which the representation of genome size data for the global flora can be increased are numerous and two examples are discussed below.

Uncovering and collating genome size data from diverse published sources

The history of angiosperm genome size research includes examples of adding several large bodies of existing but unconnected information to the database. These include the addition of values for species originally reported only as relative values, but incorporated after new work obtained absolute estimates for taxa in such studies by using known calibration standards (Bennett and Smith, 1976). Another example concerns efforts to locate and add previously unpublished estimates. This is epitomized by the addition of 411 such estimates (including first values for 308 species) by Zonneveld (see Zonneveld *et al.*, 2005). Thus, it is worth asking if opportunities exist to add substantial numbers of species' estimates from other sources. This seems possible given long entrenched patterns of literature citation. Even in western literature published in English, North American authors are much more likely to cite genome size estimates listed in North American journals (such as those of Arumuganathan and Earle, 1991*a*, *b*) whereas Europeans are more likely to cite estimates published in European journals. Such tendencies may have led to the omission of pools of genome size data published in non-western literature and languages. The present authors have previously excluded some estimates published in Russian or oriental journals, due to major technical problems (e.g. Zakirowa and Vakhtina, 1974; discussed in Bennett and Smith, 1976). However, other significant pools of quality genome size estimates published only in eastern European or oriental languages and journals may well have been overlooked, and be largely unknown in the west. This seems especially likely for the pre-computer, cold-war decades (1960–1980) when translations into English were fewer and global communication less free. This possibility should be explored with urgency given the loss of practitioners with first-hand knowledge of that period. It could prove highly worthwhile if it connects to untapped pools of first genome size estimates for target taxa endemic to under-represented geographical regions (e.g. Asia) and plant types (e.g. tundra, desert, montane).

TABLE 4. *The number and percentage of original references with first authors from various geographical regions among the 151 sources contributing to the present Appendix table compared with two previous compilations of angiosperm DNA amounts*

	DNA C-value compilation							
	2005*		2005†		Present Appendix		Total for all compilations‡	
Area	No.	%	No.	%	No.	%	No.	%
Europe	54	61·4	1	100·0	103	68·2	359	58·2
UK	10	11·4	0	0·0	8	5·3	117	19·0
North America	13	14·8	0	0·0	27	17·9	116	18·8
South & Meso America	2	2·3	0	0·0	7	4·6	28	4·5
Africa	2	2·3	0	0·0	2	1·3	9	1·5
Asia	17	19·3	0	0·0	9	6·0	83	13·5
India	11	12·5	0	0·0	2	1·3	60	9·7
China	2	2·3	0	0·0	0	0·0	2	0·3
Australasia	0	0·0	0	0·0	3	2·0	22	3·6
Australia	0	0·0	0	0·0	1	0·7	11	1·8
Total	88				151		617	

* Bennett and Leitch (2005*a*).
† Zonneveld *et al.* (2005).
‡ Compilations 1–9 (see Table 1).

Screening ex situ *and* in situ *collections as sources of target taxa*

The need to improve geographical representation for angiosperm C-values was first noted in 1995 (Bennett and Leitch, 1995) and this was confirmed at the two plant genome size workshops held in 1997 and 2003. Bennett and Leitch (2005*a*) further highlighted the issue as a major problem. However, despite this, no specific regional targets have ever been set at any of the workshops, perhaps because those for improving systematic representation had top priority and seemed daunting to many. Consequently, representation by geographical region has never been directly quantified and this failure is unfortunate.

The qualitative impression that geographical representation is grossly unequal between regions reflects two critical concerns noted by Bennett and Leitch (2005*a*) regarding the geographical distribution of angiosperm C-value work.

(1) The first concerned a serious imbalance between the geographical distribution of research scientists working on genome size and of taxa whose C-values are unknown (Bennett *et al.*, 2000; Bennett and Leitch, 2005*a*). This is illustrated in Table 4 where an analysis of the 151 original sources contributing data to the Appendix shows that the first author for 68·2 % of the publications had a European address, with 17·9 % from North America, whilst only 6·0, 4·6 and 1·3 % were from Asia, South and Meso-America, and Africa, respectively. Thus, the historical pattern of geographical imbalance between the distribution of researchers and plants with unknown genome sizes clearly shows no improvement. Indeed, a comparison with the previous analysis reported in Bennett and Leitch (2005*a*) shows changes including significant falls in source references with first authors in India. This is probably due to the 'obsolescence time bomb' (Bennett and Leitch, 1997, 2005*a*) as microdensitometers finally fail and have not, as yet, been replaced with flow cytometers.

(2) The second concern relates to the small number of first C-values by any author for species endemic to several large geographical regions. With notable exceptions, the sample is still dominated by crops and their wild relatives, other species growing near laboratories in temperate regions, mainly in Western Europe and North America, and model organisms. Consequently, we remain ignorant of the genome size profiles for species-rich floras of large nations such as China, Japan, South Africa, Brazil and Mexico, many of which are rich in endemics. For example, south-west China with over 20 000 species of plants has the most endemic-rich temperate flora of the world (Wang *et al.*, 1993, 1994) and yet genome size data for this region remain sparse. In addition, our knowledge of large islands, many of which also include biodiversity hotspots (e.g. Australia, Borneo and Madagascar where 80 % of the 12 000 described plant species are endemic; Robinson, 2004) is unimproved.

There are two ways in which the rich botanical resources around the world could be used to increase geographical representation. One approach is to train operators and position flow cytometers in each target region, tasked with surveying the local flora while focusing on target taxa such as endemics (Leitch and Bennett, 2007). Acquiring suitable research material for such work may benefit from sourcing verified material in local botanical collections.

An alternative approach is to train operators and then position flow cytometers linked to large *ex situ* botanical collections. The way in which this may work can be illustrated by considering the Millennium Seed Bank (MSB) at RBG, Kew. The MSB was initiated in 1997 and was targeted to collect samples of all bankable species in the British Flora by 2000 as well as samples of 24 200 species representing about 10 % of the global angiosperm flora by 2010. The former target was effectively reached by 2000, while with 25 000 species now collected the main target was successfully completed on time and under budget in 2009 [see *Samara* Issue 17 (2009), page 6: www.kew.org/msbp/samara]. Seed collecting is done under agreements with many countries and it is notable that this includes several whose floras have been identified as severely under-represented in the plant genome size database (e.g. China, South Africa and Madagascar). As small samples of about 100 seeds of banked taxa must be tested at intervals to monitor germination levels, such samples could also routinely be used to provide material for genome size studies and chromosome counts, with no further loss to the main banked samples. Such additional use as routine would clearly enhance the value of the banked samples by providing otherwise unknown genetic information about these living *ex situ* collections.

Subsequent to creating the MSB, a similar facility in partnership with the MSB was opened at Kunming in China in 2007, tasked with collecting 19 000 species (approx. two-thirds of the Chinese flora) within 15 years (Cyranoski, 2003). It is notable that by 2009 already nearly 5000 species had been collected (Li and Pritchard, 2009). If the owners of these genetic resources agree/approve, then linking the seed bank in Kunming with cytological and flow cytometry capabilities could certainly contribute to solving under-representation of the Chinese flora in a focused programme at minimal cost.

Indeed, if such an approach proves successful then replicating it in other regions of the world, particularly those with species-rich floras such as Africa, Australia and South America, will significantly broaden and extend our knowledge and provide new insights and understanding into the biological significance of angiosperm genome size diversity.

DEDICATION

This paper is dedicated to the esteemed memory of Professor Hugh Rees FRS (1923–2009) who made many major contributions to plant genome size research. His seminal study on nuclear DNA amounts in wheat (Rees, 1963; Rees and Walters, 1965) showed the value of comparing genome sizes to investigate the ancestry of allopolyploids. He introduced many students and collaborators to using Feulgen photomicrodensitometry and to exploring its powerful applications. Their research revealed striking examples of intrageneric variation to generate significant early samples of genome size estimates for plant species (e.g. Rees *et al.*, 1966), and used such data in comparative studies to address broad questions in cell biology (Evans and Rees, 1971). He inspired many, including the present first author, who owe him an inestimable debt of gratitude for his foundational vision, generous enthusiasm and life-long encouragement.

ACKNOWLEDGEMENTS

We would like to thank all our colleagues who have contributed genome size data to this paper and to L. Hanson, J. Greensmith and M. O'Reilley who helped in entering data into the Appendix table. Finally I.J.L. would like to thank NERC for financial support.

LITERATURE CITED

Albach DC, Greilhuber J. 2004. Genome size variation and evolution in *Veronica*. *Annals of Botany* **94**: 897–911.

Amsellem L, Chevallier MH, Hossaert-McKey M. 2001. Ploidy level of the invasive weed *Rubus alceifolius* (Rosaceae) in its native range and in areas of introduction. *Plant Systematics and Evolution* **228**: 171–179.

APG. 1998. An ordinal classification for the families of flowering plants. *Annals of the Missouri Botanical Garden* **85**: 531–553.

APG II. 2003. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants. *Botanical Journal of the Linnean Society* **141**: 399–436.

APG III. 2009. An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG III. *Botanical Journal of the Linnean Society* **161**: 105–121.

Arabidopsis Genome Initiative. 2000. Analysis of the genome sequence of the flowering plant *Arabidopsis thaliana*. *Nature* **408**: 796–815.

Armbrust EV, Berges JA, Bowler C, *et al*. 2004. The genome of the diatom *Thalassiosira pseudonana*: ecology, evolution, and metabolism. *Science* **306**: 79–86.

Arumuganathan K, Earle ED. 1991*a*. Nuclear DNA content of some important plant species. *Plant Molecular Biology Reporter* **9**: 208–218.

Arumuganathan K, Earle ED. 1991*b*. Estimation of nuclear DNA content of plants by flow cytometry. *Plant Molecular Biology Reporter* **9**: 229–241.

Bacic T, Jogan N, Dolenc Koce J. 2007. *Luzula* sect. *Luzula* in the southeastern Alps – karyology and genome size. *Taxon* **56**: 129–136.

Baranyi M, Greilhuber J. 1996. Flow cytometric and Feulgen densitometric analysis of genome size variation in *Pisum*. *Theoretical and Applied Genetics* **92**: 297–307.

Barow M, Jovtchev G. 2007. Endopolyploidy in plants and its analysis by flow cytometry. In: Doležel J, Greilhuber J, Suda J. eds. *Flow cytometry with plant cells.* Weinheim: Wiley-VCH Verlag GmbH & Co., 349–372.

Barow M, Meister A. 2002. Lack of correlation between AT frequency and genome size in higher plants and the effect of nonrandomness of base sequences on dye binding. *Cytometry* **47**: 1–7.

Barow M, Meister A. 2003. Endopolyploidy in seed plants is differently correlated to systematics, organ, life strategy and genome size. *Plant Cell and Environment* **26**: 571–584.

Beaulieu JM, Leitch IJ, Knight CA. 2007*a*. Genome size evolution in relation to leaf strategy and metabolic rates revisited. *Annals of Botany* **99**: 495–505.

Beaulieu JM, Moles AT, Leitch IJ, Bennett MD, Dickie JB, Knight CA. 2007*b*. Correlated evolution of genome size and seed mass. *New Phytologist* **173**: 422–437.

Beaulieu JM, Leitch IJ, Patel S, Pendharkar A, Knight CA. 2008. Genome size is a strong predictor of cell size and stomatal density in angiosperms. *New Phytologist* **179**: 975–986.

Beaulieu JM, Smith S, Leitch IJ. 2010. On the tempo of genome size evolution in angiosperms. *Journal of Botany* **2010**: Article ID 989152. doi:10.1155/2010/989152.

Bennett MD. 1972. Nuclear DNA content and minimum generation time in herbaceous plants. *Proceedings of the Royal Society of London Series B* **181**: 109–135.

Bennett MD. 1987. Variation in genomic form in plants and its ecological implications. *New Phytologist* **106**: 177–200.

Bennett MD. 1998. Plant genome values: How much do we know? *Proceedings of the National Academy of Sciences, USA* **95**: 2011–2016.

Bennett MD, Leitch IJ. 1995. Nuclear DNA amounts in angiosperms. *Annals of Botany* **76**: 113–176.

Bennett MD, Leitch IJ. 1997. Nuclear DNA amounts in angiosperms – 583 new estimates. *Annals of Botany* **80**: 169–196.

Bennett MD, Leitch IJ. 2005a. Nuclear DNA amounts in angiosperms – progress, problems and prospects. *Annals of Botany* **95**: 45–90.

Bennett MD, Leitch IJ. 2005b. Plant genome size research – a field in focus. *Annals of Botany* **95**: 1–6.

Bennett MD, Leitch IJ. 2005c. Genome size evolution in plants. In: Gregory TR. ed. *The evolution of the genome.* San Diego: Elsevier, 89–162.

Bennett MD, Leitch IJ. 2010. Plant DNA C-values Database (release 5·0, December 2010). http://data.kew.org/cvalues/.

Bennett MD, Smith JB. 1976. Nuclear DNA amounts in angiosperms. *Philosophical Transactions of the Royal Society of London Series B-Biological Sciences* **274**: 227–274.

Bennett MD, Smith JB. 1991. Nuclear DNA amounts in angiosperms. *Philosophical Transactions of the Royal Society of London Series B-Biological Sciences* **334**: 309–345.

Bennett MD, Smith JB, Heslop-Harrison JS. 1982. Nuclear DNA amounts in angiosperms. *Proceedings of the Royal Society of London Series B-Biological Sciences* **216**: 179–199.

Bennett MD, Leitch IJ, Hanson L. 1998. DNA amounts in two samples of angiosperm weeds. *Annals of Botany* **82**: 121–134.

Bennett MD, Bhandol P, Leitch IJ. 2000. Nuclear DNA amounts in angiosperms and their modern uses – 807 new estimates. *Annals of Botany* **86**: 859–909.

Bennett MD, Leitch IJ, Price HJ, Johnston JS. 2003. Comparisons with *Caenorhabditis* (~100 Mb) and *Drosophila* (~175 Mb) using flow cytometry show genome size in *Arabidopsis* to be ~157 Mb and thus 25 % larger than the *Arabidopsis* genome initiative estimate of ~125 Mb. *Annals of Botany* **91**: 547–557.

Bennett MD, Price HJ, Johnston JS. 2008. Anthocyanin inhibits propidium iodide DNA fluorescence in *Euphorbia pulcherrima*: implications for genome size variation and flow cytometry. *Annals of Botany* **101**: 777–790.

Biradar DP, Rayburn AL. 1993. Heterosis and nuclear DNA content in maize. *Heredity* **71**: 300–304.

Boscaiu M, Ellul P, Soriano P, Vicente O. 2008. Nuclear DNA content variation in *Halimium* and *Xolantha* (Cistaceae). *Plant Biosystems* **142**: 17–23.

Boyko EV, Badaev NS, Maximov NG, Zelenin AV. 1984. Does DNA content change in the course of Triticale breeding. *Cereal Research Communication* **12**: 99–100.

Bradshaw HD, Stettler RF. 1993. Molecular genetics of growth and development in *Populus*. 1. Triploidy in hybrid Poplars. *Theoretical and Applied Genetics* **86**: 301–307.

Bureš P, Wang Y-F, Horová L, Suda J. 2004. Genome size variation in Central European species of *Cirsium* (Compositae) and their natural hybrids. *Annals of Botany* **94**: 353–363.

***C. elegans* Sequencing Consortium. 1998.** Genome sequence of the nematode *C. elegans*: a platform for investigating biology. *Science* **282**: 2012–2018.

Carlón L, Casares GG, Laínz M, Moral GM, Pedraja ÓS, Schneeweiss GM. 2008. Más, a propósito de algunas *Phelipanche* Pomel, *Boulardia* F.W.Schultz y *Orobanche* L. (*Orobanchaceae*) del oeste del Paleártico. *Documentos del Jardín Botánico Atlántico (Gijón)* **6**: 1–128.

Chase MW, Hanson L, Albert VA, Whitten WM, Williams NH. 2005. Life history evolution and genome size in subtribe Oncidiinae (Orchidaceae). *Annals of Botany* **95**: 191–199.

Cheng RIJ, Grant WF. 1973. Species relationships in the *Lotus corniculatus* group as determined by karyotype and cytophotometric analyses. *Canadian Journal of Genetics and Cytology* **15**: 101–115.

Costich DE, Meagher TR, Yurkow EJ. 1991. A rapid means of sex identification in *Silene latifolia* by use of flow cytometry. *Plant Molecular Biology Reporter* **9**: 359–370.

Cyranoski D. 2003. Biodiversity schemes take root in China. *Nature* **425**: 890.

Dart S, Kron P, Mable BK. 2004. Characterizing polyploidy in *Arabidopsis lyrata* using chromosome counts and flow cytometry. *Canadian Journal of Botany* **82**: 185–197.

von Dassow P, Petersen TW, Chepurnov VA, Armbrust EV. 2008. Inter- and intraspecific relationships between nuclear DNA content and cell size in selected members of the centric diatom genus *Thalassiosira* (Bacillariophyceae). *Journal of Phycology* **44**: 335–349.

Dolenc Koce J, Vilhar B, Bohanec B, Dermastia M. 2003. Genome size of Adriatic seagrasses. *Aquatic Botany* **77**: 17–25.

Dolenc Koce J, Škondric S, Bacic T, Dermastia M. 2008. Amounts of nuclear DNA in marine halophytes. *Aquatic Botany* **89**: 385–389.

Dolezalová I, Lebeda A, Janecek J, Cíhalíková J, Erísková E. 2002. Variation in chromosome numbers and nuclear DNA contents in

genetic resources of *Lactuca* L. species (Asteraceae). *Genetic Resources and Crop Evolution* **49**: 383–395.

Doležel J. 1991. Flow cytometric analysis of nuclear DNA content in higher plants. *Phytochemical Analysis* **2**: 143–154.

Doležel J, Bartos J. 2005. Plant DNA flow cytometry and estimation of nuclear genome size. *Annals of Botany* **95**: 99–110.

Doležel J, Greilhuber J. 2010. Nuclear genome size: are we getting closer? *Cytometry Part A* **77A**: 635–642.

Doležel J, Sgorbati S, Lucretti S. 1992. Comparison of three DNA fluorochromes for flow cytometric estimation of nuclear DNA content in plants. *Physiologia Plantarum* **85**: 625–631.

Doležel J, Dolezelova M, Novak FJ. 1994. Flow cytometric estimation of nuclear DNA amount in diploid bananas (*Musa acuminata* and *M. balbisiana*). *Biologia Plantarum* **36**: 351–357.

Doležel J, Greilhuber J, Lucretti S, *et al*. 1998. Plant genome size estimation by flow cytometry: inter-laboratory comparison. *Annals of Botany* **82 (Suppl. A)**: 17–26.

Doležel J, Bartoš J, Voglmayr H, Greilhuber J. 2003. Nuclear DNA content and genome size of trout and human. *Cytometry Part A* **51A**: 127–128.

Doležel J, Greilhuber J, Suda J. 2007. Estimation of nuclear DNA content in plants using flow cytometry. *Nature Protocols* **2**: 2233–2244.

Eilam T, Anikster Y, Millet E, Manisterski J, Sag-Assif O, Feldman M. 2007. Genome size and genome evolution in diploid Triticeae species. *Genome* **50**: 1029–1037.

Evans GM, Rees H. 1971. Mitotic cycles in dicotyledons and monocotyledons. *Nature* **212**: 697–699.

Ferguson AR, O'Brien IEW, Yan G. 1997. Ploidy in *Actinidia*. *Acta Horticulturae* **444**: 67–71.

Francis D, Davies MS, Barlow PB. 2008. A strong nucleotypic effect of DNA C-value on the cell cycle regardless of ploidy level. *Annals of Botany* **101**: 747–757.

French-Italian Public Consortium for Grapevine Genome Characterisation. 2007. The grapevine genome sequence suggests ancestral hexaploidization in major angiosperm phyla. *Nature* **449**: 463–467.

Fujimoto S, Ito M, Matsunaga S, Fukui K. 2005. An upper limit of the ratio of DNA volume to nuclear volume exists in plants. *Genes and Genetic Systems* **80**: 345–350.

Galbraith DW. 2009. Simultaneous flow cytometric quantification of plant nuclear DNA contents over the full range of described angiosperm 2C values. *Cytometry Part A* **75A**: 692–698.

Galbraith DW, Harkins KR, Maddox JM, Ayres NM, Sharma DP, Firoozabady E. 1983. Rapid flow cytometric analysis of the cell cycle in intact plant tissues. *Science* **220**: 1049–1051.

Gao J, Scott JG. 2006. Use of quantitative real-time polymerase chain reaction to estimate the size of the house-fly *Musca domestica* genome. *Insect Molecular Biology* **15**: 835–837.

Garnatje T, Valles J, Garcia S, *et al*. 2004. Genome size in *Echinops* L. and related genera (Asteraceae, Cardueae): karyological, ecological and phylogenetic implications. *Biology of the Cell* **96**: 117–124.

Gatt M, Hammett K, Murray B. 1999. Confirmation of ancient polyploidy in *Dahlia* (Asteraceae) species using genomic *in situ* hybridization. *Annals of Botany* **84**: 39–48.

Goff SA, Ricke D, Lan TH, *et al*. 2002. A draft sequence of the rice genome (*Oryza sativa* L. ssp. *japonica*). *Science* **296**: 92–100.

Graham MJ, Nickell CD, Rayburn AL. 1994. Relationship between genome size and maturity group in soybean. *Theoretical and Applied Genetics* **88**: 429–432.

Gregory TR. 2005. Genome size evolution in animals. In: Gregory TR. ed. *The evolution of the genome*. San Diego: Elsevier, 3–87.

Gregory TR. 2006. Animal Genome Size Database. http://www.genomesize.com.

Greilhuber J. 2005. Intraspecific variation in genome size in angiosperms – identifying its existence. *Annals of Botany* **95**: 91–98.

Greilhuber J, Ebert I. 1994. Genome size variation in *Pisum sativum*. *Genome* **37**: 646–655.

Greilhuber J, Obermayer R. 1997. Genome size and maturity group in *Glycine max* (soybean). *Heredity* **78**: 547–551.

Greilhuber J, Doležel J, Lysak MA, Bennett MD. 2005. The origin, evolution and proposed stabilization of the terms 'Genome size' and 'C-value' to describe nuclear DNA contents. *Annals of Botany* **95**: 255–260.

Greilhuber J, Borsch T, Müller K, Worberg A, Porembski S, Barthlott W. 2006. Smallest angiosperm genomes found in Lentibulariaceae with chromosomes of bacterial size. *Plant Biology* **8**: 770–777.

Greilhuber J, Temsch EM, Loureiro J. 2007. Nuclear DNA content measurement. In: Doležel J, Greilhuber J, Suda J. eds. *Flow cytometry with plant cells*. Weinheim: Wiley-VCH, 67–102.

Greuter W, Barrie FR, Burdet HM, *et al*. 1994. International code of botanical nomenclature (Tokyo Code) adopted by the Fifteenth International Botanical Congress, Yokohama, August-September 1993. *Regnum Vegetabile* 131. Königstein, Germany: Koeltz Scientific Books.

Grundt HH, Obermayer R, Borgen L. 2005. Ploidal levels in the arctic-alpine polyploid *Draba lactea* (Brassicaceae) and its low-ploid relatives. *Botanical Journal of the Linnean Society* **147**: 333–347.

Halkka O. 1964. A photometric study of the *Luzula* problem. *Hereditas* **52**: 81–88.

Hanson L, McMahon KA, Johnson MAT, Bennett MD. 2001*a*. First nuclear DNA C-values for 25 angiosperm families. *Annals of Botany* **87**: 251–258.

Hanson L, McMahon KA, Johnson MAT, Bennett MD. 2001*b*. First nuclear DNA C-values for another 25 angiosperm families. *Annals of Botany* **88**: 851–858.

Hanson L, Brown RL, Boyd A, Johnson MAT, Bennett MD. 2003. First nuclear DNA C-values for 28 angiosperm genera. *Annals of Botany* **91**: 1–8.

Hendrix B, Stewart JM. 2005. Estimation of the nuclear DNA content of *Gossypium* species. *Annals of Botany* **95**: 789–797.

Hodgson JG, Sharafi M, Jalili A, *et al*. 2010. Stomatal vs. genome size in angiosperms: the somatic tail wagging the genomic dog? *Annals of Botany* **105**: 573–584.

Houben A, Demidov D, Gernand D, Meister A, Leach CR, Schubert I. 2003. Methylation of histone H3 in euchromatin of plant chromosomes depends on basic nuclear DNA content. *Plant Journal* **33**: 967–973.

Huang S, Li R, Zhang Z, *et al*. 2009. The genome of the cucumber, *Cucumis sativus* L. *Nature Genetics* **41**: 1275–1281.

Huff DR, Palazzo AJ. 1998. Fine fescue species determination by laser flow cytometry. *Crop Science* **38**: 445–450.

Jakob SS, Meister A, Blattner FR. 2004. Considerable genome size variation of *Hordeum* species (Poaceae) is linked to phylogeny, life form, ecology, and speciation rates. *Molecular Biology and Evolution* **21**: 860–869.

Jedrzejczyk I, Sliwinska E. 2010. Leaves and seeds as materials for flow cytometric estimation of the genome size of 11 Rosaceae woody species containing DNA-staining inhibitors. *Journal of Botany* **2010**. doi:10.1155/2010/930895.

Jeyaprakash A, Hoy MA. 2009. The nuclear genome of the phytoseiid *Metaseiulus occidentalis* (Acari: Phytoseiidae) is among the smallest known in arthropods. *Experimental and Applied Acarology* **47**: 263–273.

Johnston JS, Pepper AE, Hall AE, *et al*. 2005. Evolution of genome size in Brassicaceae. *Annals of Botany* **95**: 229–235.

Knight CA, Clancy RB, Götzenberger L, Dann L, Beaulieu JM. 2010. On the relationship between pollen size and genome size. *Journal of Botany* **2010**. doi:10.1155/2010/612017.

Kochjarová J, Valachovic M, Bureš P, Mráz P. 2006. The genus *Cochlearia* L. (Brassicaceae) in the Eastern Carpathians and adjacent area. *Botanical Journal of the Linnean Society* **151**: 355–364.

Kula A, Dudziak B, Sliwinska E, *et al*. 2006. Cytomorphological studies on American and European *Phleum commutatum* Gaud. (Poaceae). *Acta Biologica Cracoviensia Series Botanica* **48**: 99–108.

Kullman B, Tamm H, Kullman K. 2005. Fungal Genome Size Database. http://www.zbi.ee/fungal-genomesize.

Lafuma L, Balkwill K, Imbert E, Verlaque R, Maurice S. 2003. Ploidy level and origin of the European invasive weed *Senecio inaequidens* (Asteraceae). *Plant Systematics and Evolution* **243**: 59–72.

Lawrence WJC. 1929. The genetics and cytology of *Dahlia* species. *Journal of Genetics* **21**: 125–159.

Leitch IJ, Bennett MD. 2007. Genome size and its uses: the impact of flow cytometry. In: Doležel J, Greilhuber J, Suda J. eds. *Flow cytometry with plant cells*. Weinheim: Wiley-VCH, 153–176.

Leitch IJ, Hanson L. 2002. DNA C-values in seven families fill phylogenetic gaps in the basal angiosperms. *Botanical Journal of the Linnean Society* **140**: 175–179.

Leitch IJ, Soltis DE, Soltis PS, Bennett MD. 2005. Evolution of DNA amounts across land plants (Embryophyta). *Annals of Botany* **95**: 207–217.

Leitch IJ, Kahandawala I, Suda J, *et al*. 2009. Genome size diversity in orchids – consequences and evolution. *Annals of Botany* **104**: 469–481.
Leitch IJ, Beaulieu JM, Chase MW, Leitch AR, Fay MF. 2010. Genome size dynamics and evolution in monocots. *Journal of Botany* **2010**. doi:10.1155/2010/862516.
Leong-Škornickovà J, Šída O, *et al*. 2007. Chromosome numbers and genome size variation in Indian species of *Curcuma* (Zingiberaceae). *Annals of Botany* **100**: 505–526.
Levin DA, Palestis BG, Jones RN, Trivers R. 2005. Phyletic hot spots for B chromosomes in angiosperms. *Evolution* **59**: 962–969.
Li D-Z, Pritchard HW. 2009. The science and economics of *ex situ* plant conservation. *Trends in Plant Science* **14**: 614–621.
Lodhi MA, Reisch BI. 1995. Nuclear DNA content of *Vitis* species, cultivars, and other genera of the Vitaceae. *Theoretical and Applied Genetics* **90**: 11–16.
Loureiro J, Rodriguez E, Doležel J, Santos C. 2006*a*. Comparison of four nuclear isolation buffers for plant DNA flow cytometry. *Annals of Botany* **98**: 679–689.
Loureiro J, Rodriguez E, Doležel J, Santos C. 2006*b*. Flow cytometric and microscopic analysis of the effect of tannic acid on plant nuclei and estimation of DNA content. *Annals of Botany* **98**: 515–527.
Loureiro J, Rodriguez E, Doležel J, Santos C. 2007*a*. Two new nuclear isolation buffers for plant DNA flow cytometry: a test with 37 species. *Annals of Botany* **100**: 875–888.
Loureiro J, Suda J, Doležel J. 2007*b*. FLOWer: a plant DNA flow cytometry database. In: Dolezel J, Greilhuber J, Suda J. eds. *Flow cytometry with plant cells.* Weinheim: Wiley-VCH Verlag GmbH & Co., 423–438.
Loureiro J, Rodriguez E, Santos C, Doležel J, Suda J. 2008. FLOWer: A Plant DNA Flow Cytometry Database (release 1·0, May 2008). http://flower.web.ua.pt/.
Lysák MA, Doležel J. 1998. Estimation of nuclear DNA content in *Sesleria* (Poaceae). *Caryologia* **52**: 123–132.
Mabberley DJ. 2008. *Mabberley's plant-book. A portable dictionary of plants, their classification and uses.* Cambridge: Cambridge University Press.
Mahelka V, Suda J, Jarolímová V, Trávnícek P, Krahulec F. 2005. Genome size discriminates between closely related taxa *Elytrigia repens* and *E. intermedia* (Poaceae: Triticeae) and their hybrid. *Folia Geobotanica* **40**: 367–384.
Mandel P, Métais P, Cuny S. 1950. Les quantités d'acide désoxypentosenucléique par leucocyte chez diverses espèces de Mammifères. *Comptes rendus des séances de la Société de biologie et de ses filiales* **231**: 1172–1174.
Marie D, Brown SC. 1993. A cytometric exercise in plant DNA histograms, with 2C values for 70 species. *Biology of the Cell* **78**: 41–51.
Martinez DA, Nelson MA. 2010. The next generation becomes the now generation. *PLoS Genetics* **6**: e1000906.
McNeal J, Arumugunathan K, Kuehl J, Boore J, dePamphilis C. 2007. Systematics and plastid genome evolution of the cryptically photosynthetic parasitic plant genus Cuscuta (Convolvulaceae). *BMC Biology* **5**: 55.
Ming R, Hou S, Feng Y, *et al*. 2008. The draft genome of the transgenic tropical fruit tree papaya (*Carica papaya* Linnaeus). *Nature* **452**: 991–996.
Mirsky AE, Ris H. 1949. Variable and constant components of chromosomes. *Nature* **163**: 666.
Munroe DJ, Harris TJR. 2010. Third-generation sequencing fireworks at Marco Island. *Nature Biotechnology* **28**: 426–428.
Muratovic E, Bogunic F, Šoljan D, Siljak-Yakovlev S. 2005. Does *Lilium bosniacum* merit species rank? A classical and molecular-cytogenetic analysis. *Plant Systematics and Evolution* **252**: 97–109.
Murray BG, Weir IE, Ferguson AR, de Lange PJ. 2003. Variation in DNA C-value and haploid genome size in New Zealand native grasses. *New Zealand Journal of Botany* **41**: 63–69.
Murray BG, De Lange PJ, Ferguson AR. 2005. Nuclear DNA variation, chromosome numbers and polyploidy in the endemic and indigenous grass flora of New Zealand. *Annals of Botany* **96**: 1293–1305.
Naganowska B, Wolko B, Sliwinska E, Kaczmarek Z. 2003. Nuclear DNA content variation and species relationships in the genus *Lupinus* (Fabaceae). *Annals of Botany* **92**: 349–355.
Naganowska B, Wolko B, Sliwinska E, Kaczmarek Z, Schifino-Wittmann M. 2006. 2C DNA variation and relationships among New World species of the genus *Lupinus* (Fabaceae). *Plant Systematics and Evolution* **256**: 147–157.
Noirot M, Barre P, Louarn J, Duperray C, Hamon S. 2000. Nucleus-cytosol interactions – A source of stoichiometric error in flow cytometric estimation of nuclear DNA content in plants. *Annals of Botany* **86**: 309–316.
Noirot M, Poncet V, Barre P, Hamon P, Hamon S, De Kochko A. 2003. Genome size variations in diploid African *Coffea* species. *Annals of Botany* **92**: 709–714.
Obermayer R, Greilhuber J. 2006. Cryptopolyploidy revisited: the case of *Vinca* (Apocynaceae). *Plant Systematics and Evolution* **256**: 201–208.
Obermayer R, Leitch IJ, Hanson L, Bennett MD. 2002. Nuclear DNA C-values in 30 species double the familial representation in pteridophytes. *Annals of Botany* **90**: 209–217.
Ohri D. 2005. Climate and growth form: the consequences for genome size in plants. *Plant Biology* **7**: 449–458.
Ohri D, Kumar A. 1986. Nuclear DNA amounts in some tropical hardwoods. *Caryologia* **39**: 303–307.
Ohri D, Bhargava A, Chatterjee A. 2004. Nuclear DNA amounts in 112 species of tropical hardwoods – New estimates. *Plant Biology* **6**: 555–561.
Panda KK, Panigrahy K, Das AB, Panda BB. 2007. Analyses of chromosome number, nuclear DNA content and RAPD profile in three morphotyptes of *Pandanus fascicularis* Lam. *Plant Genetic Resources Newsletter* **152**: 12–22.
Panda KK, Das AB, Panda BB. 2009. Use and variation of *Pandanus tectorius* Parkinson (*P. fascicularis* Lam.) along the coastline of Orissa, India. *Genetic Resources and Crop Evolution* **56**: 629–637.
Paterson AH, Bowers JE, Bruggmann R, *et al*. 2009. The *Sorghum bicolor* genome and the diversification of grasses. *Nature* **457**: 551–556.
Paton AJ, Brummitt N, Govaerts R, *et al*. 2008. Towards Target 1 of the Global Strategy for Plant Conservation: a working list of all known plant species – progress and prospects. *Taxon* **57**: 602–611.
Pedersen RA. 1971. DNA content, ribosomal gene multiplicity, and cell size in fish. *Journal of Experimental Zoology* **177**: 65–79.
Pellicer J, Fay MF, Leitch IJ. 2010. The largest eukaryotic genome of them all? *Botanical Journal of the Linnean Society* **164**: 10–15.
Pinto G, Loureiro J, Lopes T, Santos C. 2004. Analysis of the genetic stability of *Eucalyptus globulus* Labill. somatic embryos by flow cytometry. *Theoretical and Applied Genetics* **109**: 580–587.
Price HJ, Dillon SL, Hodnett G, Rooney WL, Ross L, Johnston JS. 2005. Genome evolution in the genus *Sorghum* (Poaceae). *Annals of Botany* **95**: 219–228.
Prokopowich CD, Gregory TR, Crease TJ. 2003. The correlation between rDNA copy number and genome size in eukaryotes. *Genome* **46**: 48–50.
Rayburn AL, Biradar DP, Bullock DG, McMurphy LM. 1993. Nuclear DNA content in F_1 hybrids of maize. *Heredity* **70**: 294–300.
Rees H. 1963. Deoxyribonucleic acid and the ancester of wheat. *Nature* **198**: 108–109.
Rees H, Walters MR. 1965. Nuclear DNA and the evolution of wheat. *Heredity* **20**: 73–82.
Rees H, Cameron FM, Hazarika MH, Jones GH. 1966. Nuclear variation between diploid angiosperms. *Nature* **211**: 828–830.
Robinson JG. 2004. The natural history of Madagascar. *Science* **304**: 53–53.
Rosenbaumová R, Placková I, Suda J. 2004. Variation in *Lamium* subg. *Galeobdolon* (Lamiaceae) – insights from ploidy levels, morphology and isozymes. *Plant Systematics and Evolution* **244**: 219–244.
Röser M, Johnson MAT, Hanson L. 1997. Nuclear DNA amounts in palms (Arecaceae). *Botanica Acta* **110**: 79–89.
Rossi AAB, Clarindo WR, Carvalho CR, de Oliveira LO. 2008. Karyotype and nuclear DNA content of *Psychotria ipecacuanha*: a medicinal species. *Cytologia* **73**: 53–60.
Ross-Ibarra J. 2007. Genome size and recombination in angiosperms: a second look. *Journal of Evolutionary Biology* **20**: 800–806.
Rounsley S, Marri P, Yu Y, *et al*. 2009. De novo next generation sequencing of plant genomes. *Rice* **2**: 35–43.
Rusk N. 2009. Cheap third-generation sequencing. *Nature Methods* **6**: 244–245.
Schmidt-Lebuhn AN, Fuchs J, Kessler M. 2008. Flow cytometric measurements do not reveal different ploidy levels in *Minthostachys* (Lamiaceae). *Plant Systematics and Evolution* **271**: 123–128.
Schmuths H, Meister A, Horres R, Bachmann K. 2004. Genome size variation among accessions of *Arabidopsis thaliana*. *Annals of Botany* **93**: 317–321.

Schnable PS, Ware D, Fulton RS, *et al*. 2009. The B73 maize genome: complexity, diversity, and dynamics. *Science* **326**: 1112–1115.
Sliwinska E, Zielinska E, Jedrzejczyk I. 2005. Are seeds suitable for flow cytometric estimation of plant genome size? *Cytometry Part A* **64A**: 72–79.
Sliwinska E, Pisarczyk I, Pawlik A, Galbraith DW. 2009. Measuring genome size of desert plants using dry seeds. *Botany-Botanique* **87**: 127–135.
Sørensen PD. 1969. Revision of the genus *Dahlia* (Compositae, Heliantheae-Coreopsidinae). *Rhodora* **71**: 309–416.
Stehlik I, Kron P, Barrett SCH, Husband BC. 2007. Sexing pollen reveals female bias in a dioecious plant. *New Phytologist* **175**: 185–194.
Stoffelen P, Noirot M, Couturon E, Bontems S, De Block P, Anthony F. 2009. *Coffea anthonyi*, a new self-compatible Central African coffee species, closely related to an ancestor of *Coffea arabica*. *Taxon* **58**: 133–140.
Suda J. 2002. New DNA ploidy level in *Empetrum* (Empetraceae) revealed by flow cytometry. *Annales Botanici Fennici* **39**: 133–141.
Suda J, Leitch IJ. 2010. The quest for suitable reference standards in genome size research. *Cytometry Part A* **77A**: 717–720.
Suda J, Kyncl T, Freiová R. 2003. Nuclear DNA amounts in Macaronesian angiosperms. *Annals of Botany* **92**: 153–164.
Suda J, Kyncl T, Jarolimova V. 2005. Genome size variation in Macaronesian angiosperms: forty percent of the Canarian endemic flora completed. *Plant Systematics and Evolution* **252**: 215–238.
Suda J, Krahulcová A, Trávnícek P, Rosenbaumová R, Peckert T, Krahulec F. 2007. Genome size variation and species relationships in *Hieracium* sub-genus *Pilosella* (Asteraceae) as inferred by flow cytometry. *Annals of Botany* **100**: 1323–1335.
Swift H. 1950. The constancy of desoxyribose nucleic acid in plant nuclei. *Proceedings of the National Academy of Sciences (USA)* **36**: 643–654.
Temsch EM, Greilhuber J, Hammett KRW, Murray BG. 2008. Genome size in *Dahlia* Cav. (Asteraceae-Coreopsideae). *Plant Systematics and Evolution* **276**: 157–166.
The International Brachypodium Initiative. 2010. Genome sequencing and analysis of the model grass *Brachypodium distachyon*. *Nature* **463**: 763–768.
Tiersch TR, Chandler RW, Wachtel SS, Elias S. 1989. Reference standards for flow cytometry and application in comparative studies of nuclear DNA content. *Cytometry* **10**: 706–710.
Turpeinen T, Kulmala J, Nevo E. 1999. Genome size variation in *Hordeum spontaneum* populations. *Genome* **42**: 1094–1099.
Van't Hof J. 1965. Relationships between mitotic cycle duration S period duration and average rate of DNA synthesis in root meristem cells of several plants. *Experimental Cell Research* **39**: 48–58.
Vendrely R, Vendrely C. 1948. La teneur du noyau cellulaire en acide désoxyribonucléique à travers les organes, les Individus et les espèces animales: Techniques et premiers résultats. *Experientia* **4**: 434–436.
Vilhar B, Vidic T, Jogan N, Dermastia M. 2002. Genome size and the nucleolar number as estimators of ploidy level in *Dactylis glomerata* in the Slovenian Alps. *Plant Systematics and Evolution* **234**: 1–13.
Vogel JP, Garvin DF, Leong OM, Hayden DM. 2006. *Agrobacterium*-mediated transformation and inbred line development in the model grass *Brachypodium distachyon*. *Plant Cell Tissue and Organ Culture* **84**: 199–211.
Walker DJ, Monino I, Gonzalez E, Frayssinet N, Correal E. 2005. Determination of ploidy and nuclear DNA content in populations of *Atriplex halimus* (Chenopodiaceae). *Botanical Journal of the Linnean Society* **147**: 441–448.
Walker DJ, Monino I, Correal E. 2006. Genome size in *Bituminaria bituminosa* (L.) C.H. Stirton (Fabaceae) populations: separation of "true" differences from environmental effects on DNA determination. *Environmental and Experimental Botany* **159**: 104–116.
Wang WT, Wu SG, Lang KY *et al*. (editors). 1993. *Vascular plants of the Hengduan Mountains, Vol. 1: Pteridophyta, Gymnospermae, Dicotyledoneae (Saururacea to Cornaceae)*. Beijing: Science Press.
Wang WT, Wu SG, Lang KY, Li PQ, Pu FT, Chen SK (editors). 1994. *Vascular plants of the Hengduan Mountains, Vol. 2: Dicotyledoneae (Diapensiacea to Asteraceae) to Monocotyledoneae (Typhaceae to Orchidaceae)*. Beijing: Science Press.
Watson JD, Crick FHC. 1953. Molecular structure of nucleic acids – a structure for deoxyribosenucleic acid. *Nature* **171**: 737–738.
Weiss-Schneeweiss H, Greilhuber J, Schneeweiss GM. 2005. Genome size evolution in holoparasitic *Orobanche* (Orobanchaceae) and related genera. *American Journal of Botany* **93**: 148–156.
Wilhelm J, Pingoud A, Hahn M. 2003. Real-time PCR-based method for the estimation of genome sizes. *Nucleic Acids Research* **31**: article e50.
Yu J, Hu SN, Wang J, *et al*. 2002. A draft sequence of the rice genome (*Oryza sativa* L. ssp. *indica*). *Science* **296**: 79–92.
Zakirowa RO, Vakhtina LI. 1974. Cytophotometrical and caryological investigation of some species of the genus *Allium* subgenus *Melanocrommyum* (Webb et Berth.) Wendelbo, Sect. *Melanocrommyum*. *Botanical Journal of the Union of Soviet Socialist Republics* **12**: 1819–1827.
Zonneveld BJM. 2008. The systematic value of nuclear DNA content for all species of *Narcissus* L. (Amaryllidaceae). *Plant Systematics and Evolution* **275**: 109–132.
Zonneveld BJM. 2010. New record holders for maximum genome size in eudicots and monocots. *Journal of Botany* **2010**: article ID 527357. doi:10.1155/2010/527357.
Zonneveld BJM, Duncan GD. 2003. Taxonomic implications of genome size and pollen colour and vitality for species of *Agapanthus* L'Héritier (Agapanthaceae). *Plant Systematics and Evolution* **241**: 115–123.
Zonneveld BJM, Duncan GD. 2006. Genome size for the species of *Nerine* Herb. (Amaryllidaceae) and its evident correlation with growth cycle, leaf width and other morphological characters. *Plant Systematics and Evolution* **257**: 251–260.
Zonneveld BJM, Grimshaw JM, Davis AP. 2003. The systematic value of nuclear DNA content in *Galanthus*. *Plant Systematics and Evolution* **241**: 89–102.
Zonneveld BJM, Leitch IJ, Bennett MD. 2005. First nuclear DNA amounts in more than 300 angiosperms. *Annals of Botany* **96**: 229–244.
Zuccaro A, Basiewicz M, Zurawska M, Biedenkopf D, Kogel KH. 2009. Karyotype analysis, genome organization, and stable genetic transformation of the root colonizing fungus *Piriformospora indica*. *Fungal Genetics and Biology* **46**: 543–550.

APPENDIX

Notes to the Appendix

The Appendix appears on pp. 19–120.

Named references in the following notes are given above in 'Literature cited', while numbered references are given in 'Original references for DNA values' following the table.

(a) The original references for species DNA amounts in the Appendix are given in a numbered list following the 'Notes to the Appendix'. Reference numbers follow on sequentially from those given in 'Notes to Table 8' by Bennett and Smith (1976, references 1–54) 'Notes to Table 1' by Bennett *et al.* (1982, references 55–107), Bennett and Smith (1991, references 108–163), 'Notes to the Appendix' by Bennett and Leitch (1995, references 164–269), 'Notes to the Appendix' by Bennett and Leitch (1997, references 270–306), 'Notes to the Appendix' by Bennett *et al.* (2000, references 307–377), 'Notes to the Appendix' by Bennett and Leitch (2005*a*, references 378–465) and Zonneveld *et al.* (2005, reference 466).

(b1) Bennett and Smith (1991) gave absolute 4C DNA values for 11 angiosperm species recommended for use as calibration standards to estimate DNA amounts in other species. More recently, Bennett *et al.* (2003) measured the genome size of *A. thaliana* to be 1C = 0·16 pg by calibration against *C. elegans* whose genome has been completely sequenced (100·4 Mb). These species and their DNA amounts are given in Table 5. If a species was calibrated in direct comparison with any one or more of the 12 standard species then the standard species used is identified in column 15 of the Appendix by the appropriate Key letter given in Table 5 (e.g. F is *Hordeum vulgare*). If a species

was first calibrated using a standard species listed above, then the original standard species is identified first and the intermediate standard species used to calibrate those species listed with it is also denoted by its number in column 1 of the Appendix. For instance, standard F (*H. vulgare*) was used to measure *Triticum turgidum* subsp. *durum* 'Inbar' (species 2118p in the Appendix), which was then used as an intermediate standard to estimate other diploid Triticeae species given by Eilam *et al.* (2007, reference 605). The calibration standard for such Triticeae species is therefore given as F-2118p.

(b2) In reference 502 (Garnatje *et al.*, 2004) *Hordeum vulgare* 'Sultan' was used as the calibration standard but they assumed a 4C DNA value of 19·62 pg (after recalibrating it against *Petunia hybrida* 'PxPc6' and *Lycopersicon esculentum* 'Roma') instead of 19·46 pg, which is the value given in Bennett and Smith (1976) and listed in Table 5.

(c) In many references listed in 'Original references for DNA values' the authors used a cultivar of a standard species different from that listed in Table 5; these are listed in Table 6. In some cases the C-value of the cultivar used was assumed to be the same as that of the cultivar given in Table 5. Evidence of intraspecific variation in a number of species suggests that such assumptions may sometimes be incorrect. In other cases the C-value of the cultivar used was different from that of the standard species listed in Table 5. For example, references 468, 536, 553 and 521 used the cultivar 'Express Long' of *Pisum sativum* with a 4C DNA value of 16·74 pg determined by Marie and Brown (1993). This value is lower than the 4C DNA amount of the cultivar 'Minerva Maple' of 19·46 pg given in Table 5.

(d) In references 518, 570, 574 and 601 the cultivar of the calibration standard was not given. References 518 and 601 used *Vicia faba* as a calibration standard, whereas reference 570 used *Triticum aestivum* and reference 574 used *Pisum sativum.*

(e) In a number of original references the authors used a plant species not listed in Table 5 as a calibration standard. These are listed in Table 7.

(f) Several papers listed in 'Original references for DNA values' used animal cells as calibration standards. Thus, references 486, 606 and 609 used chicken erythrocytes with an assumed 4C DNA value of 4·66 pg (taken from Galbraith *et al.*, 1983, or Costich *et al.*, 1991) whereas reference 516 assumed a 4C DNA value of 4·68 pg (Mirsky and Ris, 1949). The calibration standard is abbreviated to *Gallus* in column 15 of the Appendix. Both references 470 and 600 used red blood cells from the rainbow trout (*Oncorhynchus mykiss*) as a standard but assumed different 4C DNA amounts – 9·94 pg (reference 470, Turpeinen *et al.*, 1999) and 10·1 pg (reference 600, Arumuganathan and Earle, 1991*b*). In both cases the abbreviation of Trout is used in the Appendix. Finally, male human leucocytes were used as a standard in reference 579 with an assumed 4C DNA amount of 14·00 pg (Tiersch *et al.*, 1989). The abbreviation of *Homo* is given in column 15 of the Appendix.

(g) When a new estimate (or estimates) is given for a species or subspecies already listed by Bennett and Smith (1976, 1991), Bennett *et al.* (1982, 2000) or Bennett and Leitch (1995, 1997), the estimate is given a number and a lower-case letter in column 1 of the Appendix. An 'a' implies that the value is preferred to any estimate for that species listed previously by the first author. Where several estimates are available for the same species, the 'a' value would automatically be chosen in any arithmetical or statistical calculations. In this context, single estimates for species and 'a' values are referred to as 'prime entries'.

(h) Intraspecific variation in nuclear DNA amount is claimed to occur in this species. Consequently, the values given in the Appendix should not be assumed to be correct for all accessions of the species. Where several C-values are listed for a single species with the same ploidy level or chromosome number within a taxon, then only the minimum and maximum values reported from a single reference are listed in the Appendix.

(i) A range of DNA amounts was reported for this species in the reference cited in column 13 of the Appendix. Intraspecific variation was not claimed to occur, so the nature of this variation is unclear. Where estimates differed by more than 10 % the minimum and maximum values are given for the same ploidy level or chromosome number in the Appendix; otherwise, only the highest value is given.

(j) According to the International Code of Botanical Nomenclature (Greuter *et al.*, 1994), the names of plant families must end in -aceae. However, eight plant families are exceptions in that each has two alternative names, both of which are correct under the Botanical Code. One is a standard name, ending in -aceae, and the other is an exception, sanctioned by long usage. These and their alternatives are as follows: Palmae (Arecaceae), Gramineae (Poaceae), Cruciferae (Brassicaceae), Leguminosae (Fabaceae), Guttiferae (Clusiaceae), Umbelliferae (Apiaceae), Labiatae (Lamiaceae) and Compositae (Asteraceae).

(k) Recent cladistic analysis using both molecular and non-molecular phylogenetic data has resulted in a revised classification of families by the Angiosperm Phylogeny Group (APG) (APG III, 2009). Familial names used in the APG classification are followed in the Appendix. Thus, although Walker *et al.* (2005, reference 469) placed *Atriplex halimus* in Chenopodiaceae, molecular and non-molecular phylogenetic data recognize that this family is embedded within Amaranthaceae (APG III, 2009) so Amaranthaceae is given in the Appendix.

TABLE 5. *The 12 angiosperm species recommended for use as calibration standards*

Key	Standard species	4C DNA amount (pg)
A	*Triticum aestivum* 'Chinese Spring'	69·27
B	*Allium cepa* 'Ailsa Craig'	67·00
C	*Vicia faba* PBI, inbred line 6	53·31
D	*Anemone virginiana* line AV 200	35·67
E	*Secale cereale* 'Petkus Spring'	33·14
F	*Hordeum vulgare* 'Sultan'	22·24
G	*Pisum sativum* 'Minerva Maple'	19·46
H	*Zea mays* 'W64A'	10·93
I	*Senecio vulgaris* (PBI population)	6·33
J	*Vigna radiata* 'Berken'	2·12
K	*Oryza sativa* 'IR36'	2·02
L	*Arabidopsis thaliana* 'Columbia'	0·64

TABLE 6. *Cultivars of standard species used that differ from those listed in Table 5*

Original reference number	Plant calibration standard used	Assumed 4C DNA amount used by authors or the Original reference (column 1) and the reference (if given) (pg)
	Allium cepa	
481	'Stuttgarter Riesen'	67·0 (Bennett and Smith, 1976)
492	var. *cepa*	No value or reference given
501	'Nasik Red'	67·0 (Bennett *et al.*, 2000)
518	'Alice'	67·0 (Doležel *et al.*, 1998)
558	'Deshi'	67·1 (Van't Hof, 1965)
	Hordeum vulgare	
481	'Ditta'	20·25 (Baranyi and Greilhuber, 1996)
497	'Ditta'	20·08 (Doležel *et al.*, 1998)
518, 594	'Hitchcock'	21·36 (no reference given)
604, 605	'Nigrate'	22·0 (Bennett and Leitch, 2005*a*)
545	*Oryza sativa* subsp. *japonica* 'Nipponbare'	1·82 (no reference given)
	Pisum sativum	
527	'Lincoln'	17·68 (Greilhuber and Ebert, 1994)
489, 502, 538	'Express Long'	16·74 (no reference given)
468, 536, 553, 521	'Express Long'	16·74 (Marie and Brown, 1993)
477, 552, 555, 557, 563, 582, 586, 588, 590	'Ctirad'	18·18 (Doležel *et al.*, 1998)
569	'Ctirad'	17·7 (Suda *et al.*, 2007)
474, 479, 505, 529, 530, 535, 572, 580	'Kleine Rheinländerin'	17·68 (Greilhuber and Ebert, 1994)
517	'Kleine Rheinländerin'	17·68 (no reference given)
597	'Kleine Rheinländerin'	No value or reference given
524	'Set'	18·22 (Naganowska *et al.*, 2006)
491, 554	'Viktoria, Kifejtð Borsó'	18·18 (Doležel *et al.*, 1998)
492	subsp. *sativum* convar. *sativum* var. *ponderosum*	18·14 (Doležel *et al.*, 1992)
	Secale cereale	
491	IPK GenBank accession no. R 737	33·60 (Jakob *et al.*, 2004)
533	var. *cereale* 'Dankovske'	32·38 (Doležel *et al.*, 1998)
597	'Dankovske'	31·14 (Doležel *et al.*, 1998)
	Triticum aestivum	
518, 595	'Arapahoe'	69·36 (no reference given)
609	'Chaika'	69·3 (Bennett and Smith, 1976)
570	'Shin Chunaga'	68 000 Mb (Fujimoto *et al.*, 2005)
475, 480	'Triple Dirk'	61·80 (ref. not given)
593	var. *lutescens*	68·6 (Mahelka *et al.*, 2005)
	Vicia faba	
518	'Inovec'	52·12 (Doležel *et al.*, 1998)
563	'Inovec'	53·80 (Doležel *et al.*, 1992)
492	subsp. *minor* var. *minor* subvar. *rigida*	No value or reference given
	Zea mays	
467, 477, 499, 514, 524, 542, 543, 550, 552, 563, 569, 573, 582, 585, 603	'CE-777'	10·86 (Lysák and Doležel, 1998)
564	'W22'	10·70 (Biradar and Rayburn, 1993)
487	subsp. *mays* 'Opaque 2'	13·32 (Bennett and Smith, 1976)

(l) The authority for this species is either unknown or unclear to the present authors.

(m) Whether voucher specimens exist for this species is unknown to the present authors.

(m1) No voucher exists for this species but the material was grown from well-defined seed stocks.

(n) The chromosome number of this species is either unknown or unclear to the present authors.

(o) The chromosome count for this species was taken from the literature and not determined by the authors of the reference cited.

(p) The ploidy level of this species is either uncertain or unclear to the present authors.

(q) The life cycle type of this species is either unknown or unclear to the present authors.

(r) The method used to measure the DNA amount is unclear.

(s) The factor of 1 pg = 978 Mbp was used to convert picograms to Mbp (Doležel *et al.*, 2003).

(t) As a rule, replicated diplophase nuclei contain a 4C DNA amount producing two unreplicated 2C nuclei by mitotic division and four 1C gametic nuclei after meiosis (irrespective of ploidy level). This convention applies well to polyploid taxa with diploidized meiotic chromosome pairing, which produce functional balanced polyhaploid gametes with 1C DNA amounts at meiosis. Thus, 4C estimates were automatically divided by 4 to generate 1C values given for all taxa of even ploidy level listed in the Appendix. However, the resulting '1C' data are not biologically meaningful for taxa with odd ploidies. Consequently, the Appendix gives only 2C and 4C values for such taxa.

(u) There is no obvious basic number for the genus *Luzula* due to the presence of holocentric chromosomes. It is therefore

TABLE 7. *Plant species used as calibration standards but not listed in Table 5*

Original reference number	Plant calibration standard used	Assumed 4C DNA amount (pg)	Abbreviation used in column 15 of Appendix
476	*Actinidia chinensis*	5·12 (Ferguson *et al.*, 1997)	*Actinidia*
473, 482, 483, 532, 581	*Agave americana*	31·8 (Zonneveld and Duncan, 2003)	*Agave* sp.
562	*Bellis perennis*	7·92 (Leong-Škornickovà *et al.*, 2007)	*Bellis*
546	*Cirsium vulgare*	11·08 (Bureš *et al.*, 2004)	*Cirsium*
484	*Clivia miniata*	78·0 (Zonneveld *et al.*, 2003)	*Clivia*
558	*Epilobium hirsutum*	1·68 (Stehlik *et al.*, 2007)	*Epilob.*
	Glycine max		
492	No cultivar given	No value or reference given	*Glycine*
518	No cultivar given	5·42 (Doležel *et al.*, 1998)	*Glycine*
571	'Burlison'	5·56 (Graham *et al.*, 1994)	*Glycine*
478, 575	'Ceresia'	4·53 (Greilhuber and Obermayer, 1997)	*Glycine*
515	'Cina 5202'	5·42 (Doležel *et al.*, 1998)	*Glycine*
518	'Polanka'	5·42 (Doležel *et al.*, 1998)	*Glycine*
477, 503, 513, 537, 552, 562, 563, 564, 591	'Polanka'	5·00 (Doležel *et al.*, 1994)	*Glycine*
616	*Haemanthus albiflos*	152·0 (Zonneveld, 2010)	*Haem.*
608	*Lactuca sativa* 'British Hilde'	11·0 (Dolezalová *et al.*, 2002)	*Lactuca*
596	*Lotus japonicus* 'Gifu B-129'	1·9 (Cheng and Grant, 1973)	*Lotus*
520	*Lupinus angustifolia*	3·78 (Naganowska *et al.*, 2003)	*Lupinus ang.*
511	*Lupinus texensis*	4·88 (Price *et al.*, 2005)	*Lupinus tex.*
539	*Medicago truncatula* 'Jemalong'	1·9 (Arumuganathan and Earle, 1991*a*)	*Medicago*
s478	*Petroselinum crispum*	9·0 (no reference given)	*Petroselinum*
	Petunia hybrida		
560, 548	No cultivar given	5·7 (Marie and Brown, 1993)	*Petunia*
489, 502	'PxPC6'	5·7 (no reference given)	*Petunia*
468, 488, 507, 520, 521, 524, 536, 543, 547, 549, 553, 598, 611	'PxPC6'	5·7 (Marie and Brown, 1993)	*Petunia*
542	*Phleum pratense*	17·84 (Kula *et al.*, 2006)	*Phleum*
	Raphanus sativus		
518	No cultivar given	2·74 (Doležel *et al.*, 1998)	*Raphanus*
554	No cultivar given	2·76 (Barow and Meister, 2002)	*Raphanus*
555	No cultivar given	2·78 (Doležel *et al.*, 1998)	*Raphanus*
492	convar. *sativus*. var. *sativus*	No value or reference given	*Raphanus*
477, 546, 552, 561	'Saxa'	2·22 (Doležel *et al.*, 1998)	*Raphanus*
518	'Saxa'	2·74 (Doležel *et al.*, 1998)	*Raphanus*
575	'Saxa'	2·11 (Greilhuber pers. comm., 1997)	*Raphanus*
522, 540	'Sparkler'	2·2 (Suda, 2002)	*Raphanus*
583	'Voran'	2·22 (Schmidt-Lebuhn *et al.*, 2008)	*Raphanus*
	Solanum lycopersicum (= *Lycopersicon esculentum*)		
567	No cultivar given	3·92 (Doležel *et al.*, 1992)	*Solan.*
578	No cultivar given	3·92 (no reference given)	*Solan.*
603	No cultivar given	3·92 (Doležel *et al.*, 1998)	*Solan.*
562	'Stupické polni tyčkové rané'	4·22 (Leong-Škornickovà *et al.*, 2007)	*Solan.*
472	'Stupické polni tyčkové rané'	3·92 (Marie and Brown, 1993)	*Solan.*
469, 477, 506, 537, 541, 546, 550, 552, 557, 563	'Stupické polni tyčkové rané'	3·92 (Doležel *et al.*, 1992)	*Solan.*
587, 589	'Stupické'	3·92 (Doležel *et al.*, 1992)	*Solan.*
544	'Gardeners Delight'	4·10 (Obermayer *et al.*, 2002)	*Solan.*
	Sorghum bicolor		
577	'Pioneer 8695'	3·34 (Price *et al.*, 2005)	*Sorghum*
511	'TX623'	3·34 (Johnston *et al.*, 2005)	*Sorghum*
	Trifolium repens		
479	No cultivar given	4·14 (Arumuganathan and Earle, 1991*a*)	*Trifolium*
512, 534	'Milo'	4·14 (Arumuganathan and Earle, 1991*a*)	*Trifolium*

difficult to allocate *Luzula* species with high chromosome numbers to any ploidy level with certainty.

(v) A regression of the nuclear fluorescence of several species versus DNA amount was used to estimate DNA amounts in the species studied. For example, Hendrix and Stewart (2005, reference 471) obtained a regression of the nuclear fluorescence of *Hordeum vulgare* 'Sultan' (4C = 22·24 pg), *Zea mays* 'W64A' (4C = 10·94 pg) and *Oryza sativa* 'IR36' (4C = 2·02pg) versus nuclear DNA content, and used this to estimate the DNA C-values of 37 *Gossypium* species.

(w) The standard species used to convert arbitrary units into absolute DNA amounts is unclear to the present authors.

(x) The DNA value given for this species in the original reference differs considerably (i.e. >100 %) from that given

in other original references cited in previous compiled lists of DNA amounts (i.e. Bennett and Smith, 1976, 1991; Bennett *et al.*, 1982, 2000; Bennett and Leitch, 1995, 1997, 2005*a*). The reason(s) for this is unknown. This C-value should therefore be used with caution until the question is resolved.

(y) The specific status of the material available for study is unclear. The data are included as information on DNA amounts for this genus is relatively sparse, so an indication of genome size in the genus may be useful.

(z) The DNA ploidy and/or chromosome number was assumed by the authors of the original reference based on the DNA amount, i.e. no chromosome counts were made of the material studied.

(aa) Traditionally, *Atriplex halimus* has been divided into two subspecies (subsp. *halimus* and *schweinfurthii*) based on differences in morphology (i.e. habit, size, leaf shape and fruit morphology). Based on cytological and genome size analysis of 20 populations of *A. halimus* by Walker *et al.* (2005) (reference 469) both diploid and tetraploid cytotypes were found. All populations identified as subsp. *halimus* were shown to be diploid whereas those identified as subsp. *schweinfruthii* were tetraploids. Individuals with intermediate morphology were shown to be tetraploid. The Appendix table gives the DNA amounts found in the diploid and tetraploid cytotypes and attributes them to the appropriate subspecies.

(ab) DNA C-values for 12 of the 13 species of *Cirsium* studied by Bureš *et al.* (2004, reference 472) were measured using the fluorochrome propidium iodide (PI). However, for *Cirsium spinosissimum* the DNA amount was estimated using DAPI and the value was calculated from the staining ratio obtained with *C. vulgare* (4C = 11·1 pg). Bureš *et al.* (2004) also included C-values for 12 natural hybrids. Our compiled lists have usually been restricted to C-values for species, and thus data for these hybrids are excluded from the Appendix.

(ac) Schmuths *et al.* (2004) (reference 494) obtained a 1Cx-value (0·206 pg) for *Arabidopsis thaliana* 'Columbia' 26 % higher than the value of 0·163 pg for the same material compared with the completely sequenced genome of *Caenorhabditis elegans* as calibration standard (Bennett *et al.*, 2003). The difference arises because Schmuths *et al.* (2004) used *Raphanus sativus* as an internal calibration standard with a 2C-value of 1·38 pg which they reported had been taken from Doležel *et al.* (1998) rather than the more widely used C-value estimate for *Raphanus sativus* 'Saxa' of 2C = 1·11 pg (Doležel *et al.*, 1992) – a difference of +24·3 %. [Actually the values cited by Doležel *et al.* (1998) were 2C = 1·22 or 1·26 pg depending on whether *Allium cepa* or *Pisum sativum* were used as the primary standard.] Had Schmuths *et al.* (2004) used a 2C-value of 1·11 pg their estimate for *A. thaliana* 'Columbia' would have been 0·166 pg, and within 2 % of the prime C-value estimate for *A. thaliana*.

(ad) Since publication of the paper by Albach and Greilhuber (2004, reference 478), two nomenclature mistakes have been corrected by D. C. Albach (Carl von Ossietzky-Universität Oldenburg, Germany, pers. comm.). *Veronica insularis* has now been corrected to *V. nakaiana* Ohwi and *V. propinqua* has been corrected to *V. vendettadeae* Albach.

(ae) Amsellem *et al.* (2001, reference 493) conducted a population survey of the invasive *Rubus alceifolius* to analyse the distribution of ploidy levels. One population from Lang Son in Vietnam was analysed in detail including multiple chromosome counts and genome size measurements using flow cytometry and internal standardization. They then used this population to screen other individuals for ploidy level using external standardization. Based on genome size data all populations were considered to be tetraploid except for a triploid population from Cuc Phuong (Vietnam). Although the data in table 1 of their paper present a range of genome sizes for the different populations studied, as these were estimated using external standardization only the genome size estimates from the Lang Son and Cuc Phuong populations are given in the present Appendix table.

(af) Vilhar *et al.* (2002, reference 497) estimated genome sizes in 55 accessions of *Dactylis glomerata* subsp. *glomerata* from five populations growing at different altitudes in Slovenia. Although intraspecific variation in DNA amount was reported, the authors were unsure if it was biologically meaningful or due to technical noise. Consequently, only the mean 2C DNA amount given in Table 1 of Vilhar *et al.* (2002) is listed in the Appendix table.

(ag) Although Ohri *et al.* (2004, reference 501) report genome size estimates for 112 species of tropical hardwoods, data for only 57 species are listed in the present Appendix table as C-values for the remaining species were previously communicated to the first author as a personal communication in 2002 (reference 454) or published in Ohri and Kumar (1986, reference 185) and already listed respectively in Bennett and Leitch (2005*a*) or Bennett and Leitch (1995).

(ah) The paper by Chase *et al.* (2005, reference 504) contains genome size data for 54 species belonging to the subtribe Oncidiinae (Orchidaceae). However, many of the data have been listed previously in the sixth compilation of Bennett *et al.* (2000) under the original reference number of 377. Thus, only 13 estimates not previously listed are included in the Appendix table.

(ai) Grundt *et al.* (2005, reference 505) estimated the genome size of *Draba* species using Feulgen combined with computer image analysis. Due to a paucity and quality of the root material available for analysis some of the results were noted to be 'extremely deviant'. Consequently, in table 3 of Grundt *et al.* (2005) absolute DNA amounts were calculated once the outlying values had been removed (their column labelled 'Absolute DNA content with correction'). It is these data that are entered into the present Appendix table.

(aj) To analyse the genetic stability following somatic embryogenesis of *Eucalyptus globulus*, Pinto *et al.* (2004, reference 506) estimated the DNA amount in zygotic embryos, somatic embryos, *in vitro*-germinated plantlets and leaves of field-grown plants. The present Appendix table gives just the DNA amounts for the field-grown plants, in keeping with previous lists which have generally excluded data for *in vitro* propagated material.

(ak) Dart *et al.* (2004, reference 508) estimated the ploidy levels in *Arabidopsis lyrata* using flow cytometry. However, instead of using an animal or plant species as the calibration standard to convert relative fluorescence into absolute DNA amounts they used 2 μm fluorescent beads which were

added to the plant sample after chopping. Prior to running their plant samples Dart *et al.* (2004) calibrated the position of the beads by preparing a combined sample with *Epilobium hirsutum* with an assumed 2C DNA content of 0·87 pg. Based on the relative positions of the beads and *E. hirsutum* the peak position of the beads was assumed to correspond to a DNA content of 1·5 pg. Although this method is likely to give an approximation of the DNA content of *A. lyrata*, such an approach is strongly discouraged because the use of fluorescent beads will (1) not alert the user to potential problems caused by secondary metabolites which can interfere with the binding of propidium iodide to the DNA (e.g. Noirot *et al.*, 2000; Loureiro *et al.*, 2006*b*; Bennett *et al.*, 2008) and (2) not monitor changes in DNA fluorochrome concentration. Both problems are likely to lead to errors in genome size estimation.

(al) Nuclear DNA contents of six populations of *Bituminaria bituminosa* were analysed in three separate months by Walker *et al.* (2006, reference 513). Genuine intraspecific variation was reported between the different populations and thus the Appendix table lists the highest and lowest mean values across the populations measured in December and April. Values estimated in August were not, however, taken into consideration as they were shown to be significantly lower (3·6–7·4 %) due to the inhibitory effects of the furanocoumarins angelicin and psoralen. These compounds, which are known to accumulate to a greater extent at higher temperatures, can effect DNA estimations by causing damage in two ways: (1) following activation by UV light, they can interact directly with the DNA, leading to chromosome aberrations, and (2) they can oxidize phenolic compounds, leading to the production of free radicals which can also damage DNA (Walker *et al.*, 2006).

(am) Obermayer and Greilhuber (2006, reference 530) measured DNA amounts in six species of *Vinca* using both flow cytometry and Feulgen microdensitometry. However, they considered that the estimates by the latter method were more accurate and thus only these values are entered into the Appendix table.

(an) Since Weiss-Schneeweiss *et al.* (2005, reference 531) was published there have been several nomenclature changes in Orobanchaceae. Based on molecular data (Carlón *et al.*, 2008) the genus *Phelipanche* has been recircumscribed and thus 15 taxa that were listed by Weiss-Schneeweiss *et al.* (2005) as belonging to section Trionychon of *Orobanche* have been moved to the genus *Phelipanche*. Further, three additional taxa originally included in *Orobanche* section Myzorrhiza (*O. californica* subsp. *californica*, *O. californica* subsp. *grandis* and *O. pinorum*) have been moved to their own genus *Myzorrhiza.*

In addition, corrections are made to two specimens that were incorrectly identified in Weiss-Schneeweiss *et al.* (2005) (H. Weiss-Schneeweiss, University of Vienna, Austria, pers. comm.). Thus, *Orobanche rosmarina* has been corrected to *P. olbiensis* and *O. foetida* has been corrected to *O. densiflora*. These new names are listed in the Appendix table.

(ao) Zonneveld and Duncan (2006, reference 532) listed DNA amounts for 81 accessions of *Nerine* corresponding to 23 species. For many species intraspecific variation was reported and the possibility that this was due to B chromosomes was raised. However, no chromosome counts were made so this could not be verified.

(ap) Lafuma *et al.* (2003, reference 539) report genome sizes for 66 southern African and 21 European populations of *Senecio inaequidens* (*sensu lato*, *s.l.*), a complex which includes *S. inaequidens*, *S. harveianus* and *S. madagascariensis*. However, the authors note it is very difficult to distinguish the three species morphologically. Consequently, the Appendix table just lists the largest and smallest genome sizes encountered in this complex for each ploidy level.

(aq) Kochjarová *et al.* (2006, reference 546) analysed several populations of *Cochlearia pyrenaica* from the Carpathian mountains and found only limited intraspecific variation in DNA amount. They attributed this to aneuploidy, although no chromosome counts were made. However, a population collected in the Ukraine (listed as *C. pyrenaica s.l.*) had 1·18-fold more DNA and larger chromosomes than the Carpathian populations (listed as *C. pyrenaica* DC.). The taxonomic position of this Ukrainian population is currently unclear and may need to be revised in light of the genome and karyotype information.

(ar) Noirot *et al.* (2003, reference 560) analysed genome size diversity in 16 diploid *Coffea* species and several additional *Coffea* plants whose specific status was unclear. Although it is not the usual practice to include DNA amounts from uncharacterized species in DNA compilations, one of the unidentified plants listed as *Coffea* sp. 'Moloundou' in Noirot *et al.* (2003) was subsequently identified as *Coffea anthonyi* (M. Noirot, Université de la Reunion, France, pers. comm.; Stoffelen *et al.*, 2009). Thus, the DNA amount for this species is included in the Appendix table.

(as) Rossi *et al.* (2008, reference 578) analysed ten populations of *Psychotria ipecacuanha* from the Amazon and Atlantic rain forests of Brazil. Nine populations had similar DNA amounts (mean 2C = 2·05 pg). However, one population from Mozar (Amazon rain forest) was found to have significantly less DNA (i.e. 2C = 1·24 pg). When combined samples were run on a flow cytometer two distinct peaks were observed, ruling out the possibility that the differences in genome size were technical. However, although chromosome counts from three populations with the higher DNA amount were shown to be $2n = 22$ no chromosome counts could be prepared from the Mozar population so the source of the DNA variation is currently unclear.

(at) In the paper by Temsch *et al.* (2008, reference 597) $2n = 32$ is reported to be the lowest chromosome number in *Dahlia*. Some authors have considered species with such a chromosome count to be diploid (e.g. Sørensen, 1969) while others have proposed that they are allotetraploid (e.g. Lawrence, 1929). This issue was resolved by Gatt *et al.* (1999) who used meiotic chromosome pairing and genomic *in situ* hybridization to show that species with $2n = 32$ were generatively tetraploid with a basic chromosome number of $x = 8$. Based on these observations, species with $2n = 32$, 34 and 36 are considered tetraploid while those with $2n = 64$ are octoploid. These ploidy levels have been used in the Appendix table.

(au) Huff and Palazzo (1998, reference 609) estimated the DNA amounts for ten fine fescue species (*Festuca*) and presented the results in their table 3. However, due to a formatting error of the table only nine species are listed although ten DNA amounts are given. Following discussions with D. R. Huff (Pennsylvania State University, USA, pers. comm.) the line of data labelled as 14 chromosomes with a 2C DNA content of 5·35 pg actually refers to the DNA amount for the Tundra fescue *F. lenensis*. All other species and DNA amounts are correctly aligned.

(av) In reference 610 Boyko *et al.* (1984) list DNA amounts for two *xTriticale* lines in arbitrary units (a.u.). In addition, they also measured *Triticum aestivum* 'Chaika' to be 110·3 a.u. To convert arbitrary units into absolute DNA amounts a conversion factor of 1 a.u. = 0·63 was used. This factor was obtained from the ratio of the 4C value of *T. aestivum* given in Table 5 (i.e. 4C = 69·3 pg) and the estimate of *T. aestivum* 'Chaika' of 110·3 a.u. given in the table in Boyko *et al.* (1984).

(aw) Panda *et al.* (2007, reference 558) estimated the genome size in three morphotypes of *Pandanus fascicularis* (spinous, spineless and *ketaki*). All three showed clear differences in DNA amount with the *ketaki* type having significantly ($P \leq 0{\cdot}05$) more DNA (1C = 2·6 pg) than the spinous (1C = 1·5 pg) or spineless (1C = 1·9 pg) types. Although all three morphotypes possessed the same chromosome numbers ($2n = 60$), phytochemical and phylogenetic analyses [using random amplification of polymorphic DNA (RAPD) markers] also identified differences, with the RAPD analysis dividing them into (1) the spinous and spineless types and (2) the *ketaki* type. Based on these results, Panda *et al.* (2007) suggested that the '... the *ketaki* morphotype deserves the status of a subspecies or variety, if not a species'. As further work is needed to confirm this the current Appendix table lists the three morphotypes as one species. However, the possibility that this might change in the future should be recognized.

(ax) Halkka (1964, reference 576) used meiotic material of four *Luzula* species to estimate genome sizes in arbitrary units (a.u.). To convert the 2C values given in table 2 by Halkka (1964) into absolute DNA amounts a conversion factor of 0·31 was used. This was obtained as the ratio of the estimate for *Luzula sudetica* given by Halkka of 2·94 a.u. and by Bacic *et al.* (2007, reference 572) (i.e. 2C = 0·91 pg listed as species 1390a in the Appendix table).

APPENDIX *Chromosome number, ploidy level, life-cycle type and nuclear DNA content in 2221 angiosperm species (superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
1a	*Acacia colletioides*[l]	–[m]	Fabaceae[j]	E	–[n]	–[p]	P	748	0·8	1·5	3·1	526	O	A	FC:PI
2a	*Acacia doratoxylon*[l]	–[m]	Fabaceae[j]	E	–[n]	–[p]	P	792	0·8	1·6	3·2	526	O	A	FC:PI
3a	*Acacia floribunda* (Vent.) Willd.	–[m]	Fabaceae[j]	E	–[n]	–[p]	P	939	1·0	1·9	3·8	526	O	A	FC:PI
4a	*Acacia oswaldii* F.Muell.	–[m]	Fabaceae[j]	E	–[n]	–[p]	P	895	0·9	1·8	3·7	526	O	A	FC:PI
5a	*Acacia suaveolens* Willd.	–[m]	Fabaceae[j]	E	–[n]	–[p]	P	880	0·9	1·8	3·6	526	O	A	FC:PI
6a	*Acacia wilhelmiana* F.Muell.	–[m]	Fabaceae[j]	E	–[n]	–[p]	P	792	0·8	1·6	3·2	526	O	A	FC:PI
7a	*Acantholepis orientalis* Less.	Yes	Asteraceae[j]	E	14	2	A	3,188	3·3	6·5	13·0	502	O	F[b2]	FC:PI
8a	*Acer negundo* L.	No	Sapindaceae	E	–[n]	–[p]	P	523	0·5	1·1	2·1	563	O	*Solan.*[e]	FC:PI
9d	*Acer pseudoplatanus* L.[i]	Yes	Sapindaceae[k]	E	–[n]	–[p]	P	601	0·6	1·2	2·5	489	O	–[w]	FC:EB
9e	*Acer pseudoplatanus* L.[i]	Yes	Sapindaceae[k]	E	–[n]	–[p]	P	797	0·8	1·6	3·3	489	O	–[w]	FC:EB
10a	*Achnatherum petriei* (Buchanan) S.W.L.Jacobs & J.Everett	Yes	Poaceae[j]	M	42	6	P	866	0·9	1·8	3·5	528	O	–[w]	FC:PI
11b	*Actinidia deliciosa* (A.Chev.) C.F.Liang & A.R.Ferguson	No	Actinidiaceae	E	–[n]	–[p]	P	2,347	2·4	4·8	9·6	563	O	G[c]	FC:PI
12a	*Adenocarpus foliolosus* (Aiton) DC.	–[m]	Fabaceae[j]	E	52[o]	4	P	875	0·9	1·8	3·6	552	O	*Glycine*[e]	FC:PI
13a	*Adenocarpus viscosus* (Willd.) Webb & Berthel. subsp. *spartioides* Rivas-Mart. & Belmonte	–[m]	Fabaceae[j]	E	c. 46, c. 48[o]	4	P	826	0·8	1·7	3·4	552	O	*Glycine*[e]	FC:PI
14c	*Aegilops bicornis* (Forssk.) Jaub. & Spach	No[m1]	Poaceae[j]	M	14	2	A	6,690	6·8	13·7	27·4	605	O	F-2118p	FC:PI
15b	*Aegilops biuncialis* Vis.	No[m1]	Poaceae[j]	M	28	4	A	10,142	10·4	20·7	41·5	604	O	F[c]	FC:PI
16b	*Aegilops caudata* L.	No[m1]	Poaceae[j]	M	14	2	A	4,734	4·8	9·7	19·4	605	O	F-2118p	FC:PI
17b	*Aegilops columnaris* Zhuk.	No[m1]	Poaceae[j]	M	28	4	A	10,621	10·9	21·7	43·4	604	O	F[c]	FC:PI
18b	*Aegilops comosa* subsp. *eucomosa* and *heldriechii* Sm. in Sibth. & Sm.	No[m1]	Poaceae[j]	M	14	2	A	5,408	5·5	11·1	22·1	605	O	F-2118p	FC:PI
19b	*Aegilops crassa* Boiss.	No[m1]	Poaceae[j]	M	28	4	A	10,621	10·9	21·7	43·4	604	O	F[c]	FC:PI
20b	*Aegilops cylindrica* Host	No[m1]	Poaceae[j]	M	28	4	A	9,379	9·6	19·2	38·4	604	O	F[c]	FC:PI
21a	*Aegilops geniculata* Roth	No[m1]	Poaceae[j]	M	28	4	A	10,064	10·3	20·6	41·2	604	O	F[c]	FC:PI
22b	*Aegilops kotschyi* Boiss.	No[m1]	Poaceae[j]	M	28	4	A	12,362	12·6	25·3	50·6	604	O	F[c]	FC:PI
23d	*Aegilops longissima* Schweinf. & Muschl.	No[m1]	Poaceae[j]	M	14	2	A	7,315	7·5	15·0	29·9	605	O	F-2118p	FC:PI
23e	*Aegilops longissima* Schweinf. & Muschl.	No	Poaceae[j]	M	14	2	A	7,017	7·2	14·4	28·7	519	O	–[w]	FC:PI
24a	*Aegilops neglecta* Req. ex Bertol.	No[m1]	Poaceae[j]	M	28	4	A	10,406	10·6	21·3	42·6	604	O	F[c]	FC:PI

25a	*Aegilops peregrina* Maire & Weiller	No[m1]	Poaceae[j]	M	28	4	A	12,245	12·5	25·0	50·1	604	O	F[c]	FC:PI
26a	*Aegilops recta* Chennav.	No[m1]	Poaceae[j]	M	42	6	A	15,863	16·2	32·4	64·9	604	O	F[c]	FC:PI
27b	*Aegilops searsii* Feldman & Kislev ex Hammer	No[m1]	Poaceae[j]	M	14	2	A	6,504	6·7	13·3	26·6	605	O	F-2118p	FC:PI
28c	*Aegilops sharonensis* Eig	No	Poaceae[j]	M	14	2	A	7,164	7·3	14·7	29·3	519	O	–[w]	FC:PI
28d	*Aegilops sharonensis* Eig	No[m1]	Poaceae[j]	M	14	2	A	7,355	7·5	15·0	30·1	605	O	F-2118p	FC:PI
29d	*Aegilops speltoides* Tausch	No[m1]	Poaceae[j]	M	14	2	A	5,682	5·8	11·6	23·2	605	O	F-2118p	FC:PI
30e	*Aegilops tauschii* (= *Aegilops squarrosa*) Coss.	No	Poaceae[j]	M	14	2	A	4,968	5·1	10·2	20·3	519	O	–[w]	FC:PI
30f	*Aegilops tauschii* (= *Aegilops squarrosa*) Coss.	No[m1]	Poaceae[j]	M	14	2	A	5,056	5·2	10·3	20·7	605	O	F-2118p	FC:PI
31f	*Aegilops triuncialis* L.	No[m1]	Poaceae[j]	M	28	4	A	9,712	9·9	19·9	39·7	604	O	F[c]	FC:PI
32b	*Aegilops umbellulata* Zhuk.	No[m1]	Poaceae[j]	M	14	2	A	5,262	5·4	10·8	21·5	605	O	F-2118p	FC:PI
32c	*Aegilops umbellulata* Zhuk.	No	Poaceae[j]	M	14	2	A	5,315	5·4	10·9	21·7	519	O	–[w]	FC:PI
33b	*Aegilops uniaristata* Vis.	No[m1]	Poaceae[j]	M	14	2	A	5,692	5·8	11·6	23·3	605	O	F-2118p	FC:PI
34b	*Aegilops vavilovii* (Zhuk.) Chennav.	No[m1]	Poaceae[j]	M	42	6	A	16,753	17·1	34·3	68·5	604	O	F[c]	FC:PI
35b	*Aegilops ventricosa* Tausch	No[m1]	Poaceae[j]	M	28	4	A	10,406	10·6	21·3	42·6	604	O	F[c]	FC:PI
36a	*Aeonium canariense* (L.) Webb & Berthel.	–[m]	Crassulaceae	E	36[o]	4	A	528	0·5	1·1	2·2	552	O	*Solan.*[e]	FC:PI
37a	*Aeonium ciliatum* (Willd.) Webb & Berthel.	–[m]	Crassulaceae	E	36[o]	4	P	499	0·5	1·0	2·0	552	O	*Solan.*[e]	FC:PI
38a	*Aeonium goochiae* (Webb & Berthel.) Webb & Berthel.	–[m]	Crassulaceae	E	36[o]	4	P	616	0·6	1·3	2·5	552	O	*Solan.*[e]	FC:PI
39a	*Aeonium holochrysum* Webb & Berthel.	–[m]	Crassulaceae	E	36[o]	4	P	597	0·6	1·2	2·4	552	O	*Solan.*[e]	FC:PI
40a	*Aeonium lindleyi* Webb & Berthel.	–[m]	Crassulaceae	E	36[o]	4	P	665	0·7	1·4	2·7	552	O	*Solan.*[e]	FC:PI
41a	*Aeonium palmense* Webb ex Christ	–[m]	Crassulaceae	E	36[o]	4	P	548	0·6	1·1	2·2	552	O	*Solan.*[e]	FC:PI
42a	*Aeonium sedifolium* (Webb ex Bolle) Pit. & Proust	–[m]	Crassulaceae	E	36[o]	4	P	660	0·7	1·4	2·7	552	O	*Solan.*[e]	FC:PI
43a	*Aeonium smithii* (Sims) Webb & Berthel.	–[m]	Crassulaceae	E	36[o]	4	P	504	0·5	1·0	2·1	552	O	*Solan.*[e]	FC:PI
44a	*Aeonium spathulatum* (Hornem.) Praeger	–[m]	Crassulaceae	E	36[o]	4	P	538	0·6	1·1	2·2	552	O	*Solan.*[e]	FC:PI
45a	*Aeonium tabulaeforme* (Haw.) Webb & Berthel.	–[m]	Crassulaceae	E	36[o]	4	P	548	0·6	1·1	2·2	552	O	*Solan.*[e]	FC:PI
46a	*Aeonium urbicum* (C. Sm. ex Buch) Webb & Berthel.	–[m]	Crassulaceae	E	36[o]	4	P	518	0·5	1·1	2·1	552	O	*Solan.*[e]	FC:PI
47a	*Aethionema grandiflorum* Boiss. & Hohen.	Yes	Brassicaceae[j]	E	24[o]	2	–[q]	694	0·7	1·4	2·8	599	O	L	FC:PI
48a	*Aethionema schistosum* Boiss. & Kotschy	Yes	Brassicaceae[j]	E	48	4	–[q]	694	0·7	1·4	2·8	599	O	L	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
49a	*Agapanthus africanus* (L.) Hoffmanns.[i]	Yes	Amaryllidaceae[k]	M	30[o]	2	P	15,452	15·8	31·6	63·2	483	O	*Agave* sp.[e]	FC:PI
49b	*Agapanthus africanus* subsp. *walshii* (L.) Hoffmanns.[i]	Yes	Amaryllidaceae[k]	M	30[o]	2	P	15,565	15·9	31·8	63·7	483	O	*Agave* sp.[e]	FC:PI
50a	*Agapanthus africanus* (L.) Hoffmanns.	Yes	Amaryllidaceae[k]	M	–[n]	3	P	–[t]	–[t]	47·6	95·1	483	O	*Agave* sp.[e]	FC:PI
51a	*Agapanthus campanulatus* Leighton subsp. *patens*[i]	Yes	Amaryllidaceae[k]	M	30[o]	2	P	10,978	11·2	22·5	44·9	483	O	*Agave* sp.[e]	FC:PI
51b	*Agapanthus campanulatus* Leighton[i]	Yes	Amaryllidaceae[k]	M	30[o]	2	P	11,125	11·4	22·8	45·5	483	O	*Agave* sp.[e]	FC:PI
52a	*Agapanthus caulescens* Sprenger[i]	Yes	Amaryllidaceae[k]	M	30[o]	2	P	11,433	11·7	23·4	46·8	483	O	*Agave* sp.[e]	FC:PI
52b	*Agapanthus caulescens* Sprenger subsp. *angustifolius*[i]	Yes	Amaryllidaceae[k]	M	30[o]	2	P	11,447	11·7	23·4	46·8	483	O	*Agave* sp.[e]	FC:PI
53a	*Agapanthus coddii* Leighton[i]	Yes	Amaryllidaceae[k]	M	30[o]	2	P	11,834	12·1	24·2	48·4	483	O	*Agave* sp.[e]	FC:PI
54a	*Agapanthus inapertus* Beauv. subsp. *hollandii* cv. Sky	Yes	Amaryllidaceae[k]	M	30[o]	2	P	12,289	12·6	25·1	50·3	483	O	*Agave* sp.[e]	FC:PI
54b	*Agapanthus inapertus* Beauv. subsp. *intermedius*[i]	Yes	Amaryllidaceae[k]	M	30[o]	2	P	12,308	12·6	25·2	50·3	483	O	*Agave* sp.[e]	FC:PI
54c	*Agapanthus inapertus* Beauv.	Yes	Amaryllidaceae[k]	M	30[o]	2	P	12,308	12·6	25·2	50·3	483	O	*Agave* sp.[e]	FC:PI
54d	*Agapanthus inapertus* Beauv. subsp. *parviflorus*	Yes	Amaryllidaceae[k]	M	30[o]	2	P	12,323	12·6	25·2	50·4	483	O	*Agave* sp.[e]	FC:PI
54e	*Agapanthus inapertus* Beauv. subsp. *pendulus*[i]	Yes	Amaryllidaceae[k]	M	30[o]	2	P	12,352	12·6	25·3	50·5	483	O	*Agave* sp.[e]	FC:PI
54f	*Agapanthus inapertus* Beauv. subsp. *inapertus* cv. White	Yes	Amaryllidaceae[k]	M	30[o]	2	P	12,455	12·7	25·5	50·9	483	O	*Agave* sp.[e]	FC:PI
55a	*Agapanthus inapertus* Beauv. subsp. *inapertus*	Yes	Amaryllidaceae[k]	M	–[n]	3	P	–[t]	–[t]	36·6	73·2	483	O	*Agave* sp.[e]	FC:PI
55b	*Agapanthus inapertus* Beauv. subsp. *intermedius*	Yes	Amaryllidaceae[k]	M	–[n]	3	P	–[t]	–[t]	36·8	73·5	483	O	*Agave* sp.[e]	FC:PI
55c	*Agapanthus inapertus* Beauv. subsp. *pendulus*	Yes	Amaryllidaceae[k]	M	–[n]	3	P	–[t]	–[t]	37·4	74·9	483	O	*Agave* sp.[e]	FC:PI
56a	*Agapanthus praecox* subsp. *praecox*[i, l]	Yes	Amaryllidaceae[k]	M	30[o]	2	P	12,401	12·7	25·4	50·7	483	O	*Agave* sp.[e]	FC:PI
56b	*Agapanthus praecox* cv. Dwarf white[i, l]	Yes	Amaryllidaceae[k]	M	30[o]	2	P	12,445	12·7	25·5	50·9	483	O	*Agave* sp.[e]	FC:PI

56c	*Agapanthus praecox* subsp. *orientalis*[i, l]	Yes	Amaryllidaceae[k]	M	30°	2	P	12,470	12·8	25·5	51·0	483	O	*Agave* sp.[e]	FC:PI
56d	*Agapanthus praecox* subsp. *minimus*[i, l]	Yes	Amaryllidaceae[k]	M	30°	2	P	12,993	13·3	26·6	53·1	483	O	*Agave* sp.[e]	FC:PI
57c	*Agave americana* L. cv. Aureomediopicta	No	Asparagaceae[k]	M	–[n]	4	P	7,775	8·0	15·9	31·8	482	O	*Agave* sp.[e]	FC:PI
57d	*Agave americana* L. cv. Aureomarginata	No	Asparagaceae[k]	M	–[n]	4	P	7,775	8·0	15·9	31·8	482	O	*Agave* sp.[e]	FC:PI
57e	*Agave americana* L. cv. Albomediopicta	No	Asparagaceae[k]	M	–[n]	4	P	7,775	8·0	15·9	31·8	482	O	*Agave* sp.[e]	FC:PI
57f	*Agave americana* L.	No	Asparagaceae[k]	M	120°	4	P	7,775	8·0	15·9	31·8	482	O	*Agave* sp.[e]	FC:PI
58a	*Agave attenuata* Salm-Dyck	No	Asparagaceae[k]	M	–[n]	2[z]	P	4,059	4·2	8·3	16·6	482	O	*Agave* sp.[e]	FC:PI
59a	*Agave chrysantha* Peebles	No	Asparagaceae[k]	M	60°	2	P	4,108	4·2	8·4	16·8	482	O	*Agave* sp.[e]	FC:PI
60b	*Agave filifera* Salm-Dyck	No	Asparagaceae[k]	M	60°	2[z]	P	3,863	4·0	7·9	15·8	482	O	*Agave* sp.[e]	FC:PI
61a	*Agave gigantensis* Gentry	No	Asparagaceae[k]	M	–[n]	4	P	7,775	8·0	15·9	31·8	482	O	*Agave* sp.[e]	FC:PI
62a	*Agave kerchovei* Lemaire	No	Asparagaceae[k]	M	120°	4	P	7,775	8·0	15·9	31·8	482	O	*Agave* sp.[e]	FC:PI
63b	*Agave lechuguilla* Torrey	No	Asparagaceae[k]	M	120°	4	P	7,775	8·0	15·9	31·8	482	O	*Agave* sp.[e]	FC:PI
64a	*Agave margaritae* Brandegee	No	Asparagaceae[k]	M	–[n]	2	P	4,205	4·3	8·6	17·2	482	O	*Agave* sp.[e]	FC:PI
65a	*Agave mckelveyana* Gentry	No	Asparagaceae[k]	M	–[n]	2	P	3,912	4·0	8·0	16·0	482	O	*Agave* sp.[e]	FC:PI
66a	*Agave mitis* Mart. var. *albidior* (Salm-Dyck) B.Ulrich	No	Asparagaceae[k]	M	60°	2	P	4,157	4·3	8·5	17·0	482	O	*Agave* sp.[e]	FC:PI
67a	*Agave neomexicana* Wooton & Standley	No	Asparagaceae[k]	M	120°	4	P	7,775	8·0	15·9	31·8	482	O	*Agave* sp.[e]	FC:PI
68b	*Agave palmeri* Engelm.	No	Asparagaceae[k]	M	–[n]	2	P	3,961	4·1	8·1	16·2	482	O	*Agave* sp.[e]	FC:PI
69a	*Agave parryi* Engelm. var. *parryi*	No	Asparagaceae[k]	M	60°	2	P	4,303	4·4	8·8	17·6	482	O	*Agave* sp.[e]	FC:PI
70a	*Agave parryi* Engelm. var. *parryi*	No	Asparagaceae[k]	M	–[n]	4	P	7,971	8·2	16·3	32·6	482	O	*Agave* sp.[e]	FC:PI
71a	*Agave parryi* Engelm. var. *couesii*	No	Asparagaceae[k]	M	–[n]	6	P	11,736	12·0	24·0	48·0	482	O	*Agave* sp.[e]	FC:PI
71b	*Agave parryi* Engelm. var. *truncata*	No	Asparagaceae[k]	M	–[n]	6	P	12,470	12·8	25·5	51·0	482	O	*Agave* sp.[e]	FC:PI
72a	*Agave parviflora* Torrey	No	Asparagaceae[k]	M	–[n]	2	P	3,765	3·9	7·7	15·4	482	O	*Agave* sp.[e]	FC:PI
73b	*Agave portoricensis* Trel.	No	Asparagaceae[k]	M	–[n]	2	P	3,716	3·8	7·6	15·2	482	O	*Agave* sp.[e]	FC:PI
74a	*Agave potatorum* Zuccarini	No	Asparagaceae[k]	M	–[n]	6	P	11,736	12·0	24·0	48·0	482	O	*Agave* sp.[e]	FC:PI
75a	*Agave pumila* De Smet ex Baker	No	Asparagaceae[k]	M	–[n]	4	P	8,020	8·2	16·4	32·8	482	O	*Agave* sp.[e]	FC:PI
76a	*Agave schottii* Engelm.	No	Asparagaceae[k]	M	60°	4	P	7,775	8·0	15·9	31·8	482	O	*Agave* sp.[e]	FC:PI
77e	*Agave sisalana* Perrine	No	Asparagaceae[k]	M	150°	5	P	–[t]	–[t]	20·2	40·4	482	O	*Agave* sp.[e]	FC:PI
78b	*Agave stricta* Salm-Dyck	No	Asparagaceae[k]	M	60°	2	P	3,814	3·9	7·8	15·6	482	O	*Agave* sp.[e]	FC:PI
79a	*Agave titanota* Gentry	No	Asparagaceae[k]	M	–[n]	2	P	4,157	4·3	8·5	17·0	482	O	*Agave* sp.[e]	FC:PI
80a	*Agave toumeyana* Trelease	No	Asparagaceae[k]	M	60°	4	P	7,775	8·0	15·9	31·8	482	O	*Agave* sp.[e]	FC:PI
81a	*Agave utahensis* Engelm.var. *nevadensis*	No	Asparagaceae[k]	M	–[n]	2	P	3,814	3·9	7·8	15·6	482	O	*Agave* sp.[e]	FC:PI
81b	*Agave utahensis* Engelm.subsp. *kaibabensis*	No	Asparagaceae[k]	M	–[n]	2	P	3,912	4·0	8·0	16·0	482	O	*Agave* sp.[e]	FC:PI
81c	*Agave utahensis* Engelm.	No	Asparagaceae[k]	M	–[n]	2	P	3,961	4·1	8·1	16·2	482	O	*Agave* sp.[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
81d	*Agave utahensis* Engelm.var. *eborispina*	No	Asparagaceae[k]	M	–[n]	2	P	4,254	4·4	8·7	17·4	482	O	*Agave* sp.[e]	FC:PI
82a	*Agave victoriae-reginae* T.Moore	No	Asparagaceae[k]	M	60[o]	2	P	3,912	4·0	8·0	16·0	482	O	*Agave* sp.[e]	FC:PI
83a	*Agave victoriae-reginae* T.Moore	No	Asparagaceae[k]	M	–[n]	6	P	11,736	12·0	24·0	48·0	482	O	*Agave* sp.[e]	FC:PI
84a	*Agrostis dyeri* Petrie	Yes	Poaceae[j]	M	42	6	P	5,286	5·4	10·8	21·6	528	O	–[w]	FC:PI
85a	*Agrostis imbecilla* Zotov	Yes	Poaceae[j]	M	42	6	P	5,271	5·4	10·8	21·6	528	O	–[w]	FC:PI
86a	*Agrostis magellanica* Lam.[i]	Yes	Poaceae[j]	M	84	12	P	10,646	10·9	21·8	43·5	528	O	–[w]	FC:PI
87a	*Agrostis muelleriana* Vickery	Yes	Poaceae[j]	M	42	6	P	5,506	5·6	11·3	22·5	528	O	–[w]	FC:PI
88a	*Agrostis muscosa* Kirk	Yes	Poaceae[j]	M	42	6	P	5,174	5·3	10·6	21·2	528	O	–[w]	FC:PI
89a	*Agrostis pallescens* Cheeseman	Yes	Poaceae[j]	M	42	6	P	5,320	5·4	10·9	21·8	528	O	–[w]	FC:PI
90a	*Agrostis personata* Edgar	Yes	Poaceae[j]	M	42	6	P	5,203	5·3	10·6	21·3	528	O	–[w]	FC:PI
91a	*Agrostis petriei* Hack.	Yes	Poaceae[j]	M	42	6	P	5,306	5·4	10·9	21·7	528	O	–[w]	FC:PI
92a	*Aichryson laxum* (Haw.) Bramwell	–[m]	Crassulaceae	E	30[o]	≥ 2	A	660	0·7	1·4	2·7	552	O	*Solan.*[e]	FC:PI
93a	*Aichryson parlatorei* Bolle	–[m]	Crassulaceae	E	c. 34	≥ 2	A	670	0·7	1·4	2·7	552	O	*Solan.*[e]	FC:PI
94a	*Allagopappus dichotomus* (L.f.) Cass.	–[m]	Asteraceae[j]	E	20[o]	2	P	856	0·9	1·8	3·5	477	O	*Glycine*[e]	FC:PI
95b	*Alliaria petiolata* (M.Bieb.) Cavara & Grande	No	Brassicaceae[j]	E	–[n]	–[p]	B	1,320	1·4	2·7	5·4	492	O	*Raphanus*[e]	FC:PI
96e	*Allium ampeloprasum* L. s.l.	Yes	Amaryllidaceae	M	–[n]	–[p]	P	32,020	32·7	65·5	131·0	492	O	B[c]	FC:PI
97m	*Allium cepa* L.	Yes	Amaryllidaceae	M	–[n]	–[p]	P	16,474	16·8	33·7	67·4	492	O	G[c]	FC:PI
98b	*Allium ledebourianum* Schult. & Schult.f.	Yes	Amaryllidaceae	M	–[n]	–[p]	P	8,538	8·7	17·5	34·9	492	O	G[c]	FC:PI
99d	*Allium triquetrum*[i, l]	No	Amaryllidaceae	M	–[n]	–[p]	P	18,655	19·1	38·2	76·3	563	O	C[c]	FC:PI
100f	*Allium ursinum* L.	No	Amaryllidaceae	M	–[n]	–[p]	P	30,357	31·0	62·1	124·2	492	O	B[c]	FC:PI
101a	*Aloysia triphylla*[l]	No	Verbenaceae	E	–[n]	–[p]	P	719	0·7	1·5	2·9	563	O	*Solan.*[e]	FC:PI
102a	*Alyssum saxatile* L.	Yes	Brassicaceae[j]	E	16	2	–[q]	636	0·7	1·3	2·6	599	O	L	FC:PI
103a	*Amana edulis* (Miq.) Honda	Yes	Liliaceae	M	24	2	P	21,003	21·5	43·0	85·9	565	O	B	FC:PI
104b	*Amblyopyrum muticum* (= *Aegilops mutica*) (Bois.) Eig	No[m1]	Poaceae[j]	M	14	2	A	5,692	5·8	11·6	23·3	605	O	F-2118p	FC:PI
105a	*Amelanchier alnifolia* Nutt. cv. Smoky	Yes	Rosaceae	E	–[n]	4[z]	P	1,311	1·3	2·7	5·4	527	O	G[c]	FC:PI
106a	*Amelanchier arboria* (Michx.f.) Fernald	Yes	Rosaceae	E	–[n]	2[z]	P	680	0·7	1·4	2·8	527	O	G[c]	FC:PI
107a	*Amphibromus fluitans* Kirk	Yes	Poaceae[j]	M	42	6	P	3,897	4·0	8·0	15·9	528	O	–[w]	FC:PI
108a	*Amphoricarpos neumayeri* Visiani	No	Asteraceae[j]	E	24	2	P	846	0·9	1·7	3·5	502	O	*Petunia*[e]	FC:PI
109a	*Andryala webbii* Sch. Bip. ex Christ	–[m]	Asteraceae[j]	E	18[o]	2	P	1,751	1·8	3·6	7·2	552	O	*Glycine*[e]	FC:PI

110a	*Anemanthele lessoniana* (Steud.) Veldkamp	Yes	Poaceae[j]	M	40-44[o]	4	P	924	0·9	1·9	3·8	528	O	–[w]	FC:PI
111a	*Anemone flaccida* F.Schmidt	No	Ranunculaceae	E	14[o]	2	P	28,020	28·7	57·3	114·6	495	O	F	FC:PI
112b	*Anemone ranunculoides* L.	No	Ranunculaceae	E	–[n]	–[p]	P	18,010	18·4	36·8	73·7	492	O	C[c]	FC:PI
113b	*Anemone sylvestris* L.	No	Ranunculaceae	E	–[n]	–[p]	P	8,323	8·5	17·0	34·0	492	O	C[c]	FC:PI
114a	*Anthocephalus cadamba* (Roxb.) Miq.	No	Rubiaceae	E	–[n]	–[p]	P	677	0·7	1·4	2·8	501[ag]	O	B[c]	Fe
115a	*Aquilegia vulgaris* L.	No	Ranunculaceae	E	–[n]	–[p]	P	494	0·5	1·0	2·0	492	O	*Raphanus*[e]	FC:PI
116a	*Arabidopsis arenosa* (L.) Lawalrée[h]	Yes	Brassicaceae[j]	E	16	2	B	196	0·2	0·4	0·8	599	O	L	FC:PI
117a	*Arabidopsis arenosa* (L.) Lawalrée[i]	Yes	Brassicaceae[j]	E	32	4	B	381	0·4	0·8	1·6	599	O	L	FC:PI
117b	*Arabidopsis arenosa* (L.) Lawalrée	–[m]	Brassicaceae[j]	E	32[o]	4	B	408	0·4	0·8	1·7	509	O	–[w]	FC:PI
117c	*Arabidopsis arensosa* (L.) Lawalrée	Yes	Brassicaceae[j]	E	32	4	B	425	0·4	0·9	1·7	540	O	*Raphanus*[e]	FC:PI
118a	*Arabidopsis cebennensis* (DC.) O'Kane & Al-Shehbaz	Yes	Brassicaceae[j]	E	16	2	B	284	0·3	0·6	1·2	599	O	L	FC:PI
119a	*Arabidopsis halleri* (L.) O'Kane & Al-Shehbaz	Yes	Brassicaceae[j]	E	16	2	B	235	0·2	0·5	1·0	599	O	L	FC:PI
119b	*Arabidopsis halleri* (L.) O'Kane & Al-Shehbaz	Yes	Brassicaceae[j]	E	16	2	B	274	0·3	0·6	1·1	540	O	*Raphanus*[e]	FC:PI
119c	*Arabidopsis halleri* (L.) O'Kane & Shehbaz subsp. *gemmifera* (Matsum.) O'Kane & Al- Shehbaz	–[m]	Brassicaceae[j]	E	16	2	B	255	0·3	0·5	1·0	509	O	–[w]	FC:PI
120a	*Arabidopsis lyrata* (L.) O'Kane & Al-Shehbaz subsp. *lyrata*	Yes	Brassicaceae[j]	E	16	2	P	245	0·3	0·5	1·0	599	O	L	FC:PI
120b	*Arabidopsis lyrata* (L.) O'Kane & Al-Shehbaz	Yes	Brassicaceae[j]	E	16	2	B	245	0·3	0·5	1·0	522	O	*Raphanus*[e]	FC:PI
120c	*Arabidopsis lyrata* L. subsp. *petraea*	No	Brassicaceae[j]	E	16	2	P	254	0·3	0·5	1·0	508	O	–[ak]	FC:PI
120d	*Arabidopsis lyrata* L. subsp. *lyrata*	No	Brassicaceae[j]	E	16	2	P	240	0·2	0·5	1·0	508	O	–[ak]	FC:PI
120e	*Arabidopsis lyrata* (L.) O'Kane & Al-Shebaz subsp. *petraea* (L.) O'Kane	No	Brassicaceae[j]	E	–[n]	–[p]	P	299	0·3	0·6	1·2	518	O	*Glycine*[e]	FC:PI
121a	*Arabidopsis lyrata* L. subsp. *petraea*	No	Brassicaceae[j]	E	32	4	P	440	0·5	0·9	1·8	508	O	–[ak]	FC:PI
121b	*Arabidopsis lyrata* (L.) O'Kane & Al-Shehbaz	–[m]	Brassicaceae[j]	E	32	4	P	458	0·5	0·9	1·9	509	O	–[w]	FC:PI
121c	*Arabidopsis lyrata* L. subsp. *kawasakiana*	No	Brassicaceae[j]	E	32	4	P	538	0·6	1·1	2·2	508	O	–[ak]	FC:PI
122a	*Arabidopsis neglecta* (Schult.) O'Kane & Al-Shehbaz[i]	Yes	Brassicaceae[j]	E	16	2	B	196	0·2	0·4	0·8	599	O	L	FC:PI
123a	*Arabidopsis neglecta* (Schult.) O'Kane & Al-Shehbaz[i]	Yes	Brassicaceae[j]	E	32	4	B	391	0·4	0·8	1·6	599	O	L	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount				Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
								1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)				
123b	*Arabidopsis neglecta* (Schult.) O'Kane & Al-Shehbaz	Yes	Brassicaceae[j]	E	32	4	B	425	0·4	0·9	1·7	540	O	*Raphanus*[e]	FC:PI
124a	*Arabidopsis pumila* Busch	No	Brassicaceae[j]	E	–[n]	–[p]	A	329	0·3	0·7	1·3	518	O	*Glycine*[e]	FC:PI
125a	*Arabidopsis suecica* Norrl.	Yes	Brassicaceae[j]	E	26	4	A	342	0·4	0·7	1·4	599	O	L	FC:PI
125b	*Arabidopsis suecica* (Fries) Norrlin	–[m]	Brassicaceae[j]	E	26[o]	4	A	348	0·4	0·7	1·4	509	O	–[w]	FC:PI
126i	*Arabidopsis thaliana* (L.) Heynh.	No	Brassicaceae[j]	E	–[n]	–[p]	A	210	0·2	0·4	0·9	492	O	*Raphanus*[e]	FC:PI
126j	*Arabidopsis thaliana* (L.) Heynh. accession Col[h]	No[m1]	Brassicaceae[j]	E	10[o]	2	A	201	0·2	0·4	0·8	494[ac]	O	*Raphanus*[e]	FC:PI
126k	*Arabidopsis thaliana* (L.) Heynh. accession Kly-1[h]	No[m1]	Brassicaceae[j]	E	10[o]	2	A	219	0·2	0·4	0·9	494[ac]	O	*Raphanus*[e]	FC:PI
126l	*Arabidopsis thaliana* (L.) Heynh.	Yes	Brassicaceae[j]	E	10[o]	2	A	166	0·2	0·3	0·7	522	O	*Raphanus*[e]	FC:PI
126m	*Arabidopsis thaliana ecotype Columbia* (L.) Heynh.	–[m]	Brassicaceae[j]	E	10	2	A	156	0·2	0·3	0·6	509	O	–[w]	FC:PI
127a	*Arabidopsis thaliana* (L.) Heynh. accession Stoc[h]	No[m1]	Brassicaceae[j]	E	20[o]	4	A	435	0·4	0·9	1·8	494[ac]	O	*Raphanus*[e]	FC:PI
127b	*Arabidopsis thaliana* (L.) Heynh. accession Wa-1[h]	–[m]	Brassicaceae[j]	E	20[o]	4	A	436	0·4	0·9	1·8	494[ac]	O	*Raphanus*[e]	FC:PI
128a	*Arabidopsis wallichii* (Hook. f. & Thomson) N.Busch	No	Brassicaceae[j]	E	–[n]	–[p]	AP	389	0·4	0·8	1·6	518	O	*Glycine*[e]	FC:PI
129a	*Arabis alpina* L.	Yes	Brassicaceae[j]	E	16	2	–[q]	372	0·4	0·8	1·5	599	O	L	FC:PI
130a	*Arabis cenisia* Reut.	Yes	Brassicaceae[j]	E	16	2	–[q]	303	0·3	0·6	1·2	599	O	L	FC:PI
131a	*Arabis hirsuta* (L.) Scop.	–[m]	Brassicaceae[j]	E	32[o]	4	–[q]	671	0·7	1·4	2·7	509	O	–[w]	FC:PI
132a	*Arabis procurrens* Waldst. & Kit.	Yes	Brassicaceae[j]	E	16, 32[o]	–[p]	–[q]	352	0·4	0·7	1·4	599	O	L	FC:PI
133a	*Arabis scopoliana* Boiss.	Yes	Brassicaceae[j]	E	–[n]	–[p]	–[q]	1,428	1·5	2·9	5·8	599	O	L	FC:PI
134a	*Arabis tibetica* Hook.f. & Thomson	Yes	Brassicaceae[j]	E	16	2	–[q]	323	0·3	0·7	1·3	599	O	L	FC:PI
135a	*Argyranthemum* cf. *coronopifolium* (Willd.) Humphries	–[m]	Asteraceae[j]	E	18[o]	2	P	6,670	6·8	13·6	27·3	552	O	G[c]	FC:PI
136a	*Argyranthemum adauctum* (Link) Humphr.subsp. *adauctum*	–[m]	Asteraceae[j]	E	18	2	P	6,694	6·8	13·7	27·4	477	O	G[c]	FC:PI
136b	*Argyranthemum adauctum* (Link) Humphr. subsp. *dugourii*	–[m]	Asteraceae[j]	E	18	2	P	6,734	6·9	13·8	27·5	477	O	G[c]	FC:PI

137a	*Argyranthemum broussonetii* (Pers.) Humphr.subsp. *broussonetii*	–[m]	Asteraceae[j]	E	18[o]	2	P	6,914	7·1	14·1	28·3	477	O	G[c]	FC:PI
138a	*Argyranthemum foeniculaceum* (Willd.) Webb ex Sch. Bip.	–[m]	Asteraceae[j]	E	18[o]	2	P	6,983	7·1	14·3	28·6	477	O	G[c]	FC:PI
139a	*Argyranthemum frutescens* (L.) Sch. Bip. subsp. *frutescens*	–[m]	Asteraceae[j]	E	18[o]	2	P	7,046	7·2	14·4	28·8	477	O	G[c]	FC:PI
140a	*Argyranthemum gracile* Sch. Bip.	–[m]	Asteraceae[j]	E	18[o]	2	P	6,934	7·1	14·2	28·4	477	O	G[c]	FC:PI
141a	*Argyranthemum haouarytheum* Humphr. & Bramw.	–[m]	Asteraceae[j]	E	18	2	P	6,548	6·7	13·4	26·8	477	O	G[c]	FC:PI
142a	*Argyranthemum teneriffae* Humphr.	–[m]	Asteraceae[j]	E	18	2	P	6,817	7·0	13·9	27·9	477	O	G[c]	FC:PI
143a	*Argyranthemum vincentii* Santos & Feria	–[m]	Asteraceae[j]	E	18	2	P	6,900	7·1	14·1	28·2	552	O	G[c]	FC:PI
144a	*Argyranthemum webbii* Sch. Bip.	–[m]	Asteraceae[j]	E	18[o]	2	P	6,572	6·7	13·4	26·9	552	O	G[c]	FC:PI
145a	*Arrhenatherum calderae* A. Hansen	–[m]	Poaceae[j]	M	–[n]	–[p]	P	4,699	4·8	9·6	19·2	552	O	H[c]	FC:PI
146a	*Artemisia abrotanum* L.	Yes	Asteraceae[j]	E	18[o]	2	P	2,826	2·9	5·8	11·6	521	O	G[c]	FC:PI
147a	*Artemisia abrotanum* L.	Yes	Asteraceae[j]	E	36[o]	4	P	5,579	5·7	11·4	22·8	521	O	G[c]	FC:PI
148d	*Artemisia absinthium* L.	Yes	Asteraceae[j]	E	18[o]	2	P	4,430	4·5	9·1	18·1	521	O	G-147a	FC:PI
149a	*Artemisia afra* Jacq.	Yes	Asteraceae[j]	E	18	2	P	3,086	3·2	6·3	12·6	521	O	G	FC:PI
150a	*Artemisia arbuscula* Nutt.	Yes	Asteraceae[j]	E	18[o]	2	P	4,509	4·6	9·2	18·4	521	O	*Petunia*[e]	FC:PI
151a	*Artemisia arenaria* DC.	Yes	Asteraceae[j]	E	36	4	P	5,032	5·1	10·3	20·6	521	O	*Petunia*[e]	FC:PI
151b	*Artemisia arenaria* DC.	Yes	Asteraceae[j]	E	36	4	P	5,086	5·2	10·4	20·8	553	O	G[c]	FC:PI
152a	*Artemisia aschurbajewii* C.Winkler	Yes	Asteraceae[j]	E	36[o]	4	P	5,066	5·2	10·4	20·7	521	O	*Petunia*[e]	FC:PI
153a	*Artemisia austriaca* Jacq.	Yes	Asteraceae[j]	E	16[o]	2	P	2,910	3·0	6·0	11·9	521	O	G[c]	FC:PI
154a	*Artemisia bargusinensis* Spreng.	Yes	Asteraceae[j]	E	36	4	P	4,254	4·4	8·7	17·4	553	O	*Petunia*[e]	FC:PI
155a	*Artemisia bigelovii* A.Gray	Yes	Asteraceae[j]	E	36[o]	4	P	7,575	7·7	15·5	31·0	521	O	G[c]	FC:PI
156b	*Artemisia caerulescens* L.	Yes	Asteraceae[j]	E	18[o]	2	P	3,144	3·2	6·4	12·9	580	O	G[c]	CIA
157b	*Artemisia campestris* L.	Yes	Asteraceae[j]	E	18	2	P	3,120	3·2	6·4	12·8	521	O	*Petunia*[e]	FC:PI
158b	*Artemisia campestris* L.[i]	Yes	Asteraceae[j]	E	36[o]	4	P	4,851	5·0	9·9	19·8	521	O	G[c]	FC:PI
158c	*Artemisia campestris* (Fr.) Leuwke & Rothm. L. subsp. *sericea*	Yes	Asteraceae[j]	E	36[o]	4	P	5,188	5·3	10·6	21·2	521	O	G[c]	FC:PI
159a	*Artemisia cana* Pursh. subsp. *viscidula* (Osterhout) Beetle	Yes	Asteraceae[j]	E	18[o]	2	P	4,176	4·3	8·5	17·1	521	O	*Petunia*[e]	FC:PI
160a	*Artemisia changaica* Krasch.	Yes	Asteraceae[j]	E	36	4	P	5,721	5·9	11·7	23·4	553	O	G[c]	FC:PI
161a	*Artemisia depauperata* Krasch.	Yes	Asteraceae[j]	E	36	4	P	4,313	4·4	8·8	17·6	553	O	*Petunia*[e]	FC:PI
162a	*Artemisia desertorum* Spreng.	Yes	Asteraceae[j]	E	36	4	P	4,044	4·1	8·3	16·5	553	O	*Petunia*[e]	FC:PI
163a	*Artemisia dracunculoides* Pursh	Yes	Asteraceae[j]	E	54	6	P	7,619	7·8	15·6	31·2	553	O	G[c]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
164a	*Artemisia dracunculus* L.	Yes	Asteraceae[j]	E	18	2	P	2,905	3·0	5·9	11·9	553	O	*Petunia*[e]	FC:PI
165a	*Artemisia dracunculus* L.	Yes	Asteraceae[j]	E	36	4	P	5,780	5·9	11·8	23·6	553	O	G[c]	FC:PI
166a	*Artemisia dracunculus* L.	Yes	Asteraceae[j]	E	54	6	P	7,682	7·9	15·7	31·4	553	O	G[c]	FC:PI
167a	*Artemisia dracunculus* L.	Yes	Asteraceae[j]	E	90	10	P	12,020	12·3	24·6	49·2	553	O	G[c]	FC:PI
168a	*Artemisia filifolia* Torrey	Yes	Asteraceae[j]	E	18	2	P	3,491	3·6	7·1	14·3	521	O	*Petunia*[e]	FC:PI
169a	*Artemisia frigida* Willd.	Yes	Asteraceae[j]	E	18	2	P	2,567	2·6	5·3	10·5	521	O	G[c]	FC:PI
170a	*Artemisia giraldii* Pamp.	Yes	Asteraceae[j]	E	18	2	P	2,934	3·0	6·0	12·0	553	O	G[c]	FC:PI
171a	*Artemisia glacialis* L.	Yes	Asteraceae[j]	E	16	2	P	4,166	4·3	8·5	17·0	521	O	*Petunia*[e]	FC:PI
172a	*Artemisia glauca* Pall. ex Willd.	Yes	Asteraceae[j]	E	36	4	P	5,853	6·0	12·0	23·9	553	O	G[c]	FC:PI
173a	*Artemisia globosa* Krasch.	Yes	Asteraceae[j]	E	36	4	P	4,533	4·6	9·3	18·5	553	O	*Petunia*[e]	FC:PI
174a	*Artemisia lagocephala* (Fischer ex Besser) DC.	Yes	Asteraceae[j]	E	18	2	P	3,301	3·4	6·8	13·5	521	O	*Petunia*[e]	FC:PI
175a	*Artemisia ledeebouriana* Besser.	Yes	Asteraceae[j]	E	36	4	P	4,279	4·4	8·8	17·5	553	O	*Petunia*[e]	FC:PI
176a	*Artemisia leucodes* Schrenk	Yes	Asteraceae[j]	E	18[o]	2	A	7,526	7·7	15·4	30·8	521	O	G[c]	FC:PI
177a	*Artemisia macilenta* (Maxim.) Krasch.	Yes	Asteraceae[j]	E	36	4	P	4,425	4·5	9·1	18·1	553	O	*Petunia*[e]	FC:PI
178a	*Artemisia marschalliana* Spreng.	Yes	Asteraceae[j]	E	18	2	P	2,626	2·7	5·4	10·7	553	O	G[c]	FC:PI
179a	*Artemisia monostachya* Bunge ex. Maxim.	Yes	Asteraceae[j]	E	36	4	P	4,293	4·4	8·8	17·6	553	O	*Petunia*[e]	FC:PI
180a	*Artemisia nova* Nelson	Yes	Asteraceae[j]	E	18[o]	2	P	3,115	3·2	6·4	12·7	521	O	*Petunia*[e]	FC:PI
181a	*Artemisia oxycephala* Kitag.	Yes	Asteraceae[j]	E	18	2	P	2,059	2·1	4·2	8·4	553	O	*Petunia*[e]	FC:PI
182a	*Artemisia persica* Boiss.	Yes	Asteraceae[j]	E	18[o]	2	P	3,203	3·3	6·6	13·1	521	O	G[c]	FC:PI
183a	*Artemisia princeps* Pampan.	Yes	Asteraceae[j]	E	52	6	P	7,139	7·3	14·6	29·2	521	O	G[c]	FC:PI
184a	*Artemisia pycnorhiza* Ledeb.	Yes	Asteraceae[j]	E	36	4	P	4,411	4·5	9·0	18·0	553	O	*Petunia*[e]	FC:PI
185a	*Artemisia pygmaea* A.Gray	Yes	Asteraceae[j]	E	18[o]	2	P	5,643	5·8	11·5	23·1	521	O	G[c]	FC:PI
186a	*Artemisia santolinifolia* Turcz ex H.Kraschen.	Yes	Asteraceae[j]	E	18	2	P	2,259	2·3	4·6	9·2	521	O	G[c]	FC:PI
187a	*Artemisia scoparia* Waldst. & Kit.	Yes	Asteraceae[j]	E	16[o]	2	A	1,731	1·8	3·5	7·1	521	O	*Petunia*[e]	FC:PI
188a	*Artemisia sieversiana* Ehrh. in Willd.	Yes	Asteraceae[j]	E	18[o]	2	A	3,017	3·1	6·2	12·3	521	O	*Petunia*[e]	FC:PI
189a	*Artemisia sosnovskyi* Krasch.	Yes	Asteraceae[j]	E	36	4	P	5,164	5·3	10·6	21·1	553	O	G[c]	FC:PI
190a	*Artemisia stelleriana* Besser	Yes	Asteraceae[j]	E	18	2	P	2,983	3·1	6·1	12·2	521	O	*Petunia*[e]	FC:PI
191a	*Artemisia subdigitata* Mattf.	Yes	Asteraceae[j]	E	36	4	P	5,716	5·8	11·7	23·4	553	O	G[c]	FC:PI
192b	*Artemisia thuscula* Cav.	–[m]	Asteraceae[j]	E	18[o]	2	P	5,589	5·7	11·4	22·9	477	O	G[c]	FC:PI
193a	*Artemisia tournefortiana* Reichenb.	Yes	Asteraceae[j]	E	18[o]	2	AB	3,452	3·5	7·1	14·1	521	O	G[c]	FC:PI

194b	*Artemisia tridentata* Nutt. subsp. *tridentata*	Yes	Asteraceae[j]	E	18[o]	2	P	3,995	4·1	8·2	16·3	521	O	*Petunia*[e]	FC:PI
194c	*Artemisia tridentata* Nutt. subsp. vaseyana (Rydb.) Beetle	Yes	Asteraceae[j]	E	18[o]	2	P	4,235	4·3	8·7	17·3	521	O	*Petunia*[e]	FC:PI
195a	*Artemisia vulgaris* L.[i]	Yes	Asteraceae[j]	E	16[o]	2	P	3,174	3·2	6·5	13·0	521	O	G[c]	FC:PI
196a	*Artemisia vulgaris* L.	Yes	Asteraceae[j]	E	36	4	P	5,941	6·1	12·2	24·3	521	O	G[c]	FC:PI
197c	*Asparagus officinalis* L.	Yes	Asparagaceae	M	–[n]	–[p]	P	1,775	1·8	3·6	7·3	554	O	*Raphanus*[e]	FC:PI
198a	*Asparagus umbellatus* Link	–[m]	Asparagaceae	M	20[o]	2	P	1,252	1·3	2·6	5·1	477	O	*Solan.*[e]	FC:PI
199a	*Aster tripolium* L.	Yes	Asteraceae[j]	E	18[o]	2	P	10,479	10·7	21·4	42·9	580	O	G[c]	CIA
200a	*Atractylis preauxiana* Sch. Bip.	–[m]	Asteraceae[j]	E	20[o]	2	P	3,897	4·0	8·0	15·9	552	O	G[c]	FC:PI
201a	*Atriplex halimus* L. subsp. *halimus*[i,aa]	No	Amaranthaceae[k]	E	18	2	P	1,193	1·2	2·4	4·9	469	O	*Solan.*[e]	FC:PI
202a	*Atriplex halimus* L. subsp. *schweinfurthii*.[h,aa]	No	Amaranthaceae[k]	E	36	4	P	2,333	2·4	4·8	9·5	469	O	*Solan.*[e]	FC:PI
202b	*Atriplex halimus* L. subsp. *schweinfurthii*[h,aa]	No	Amaranthaceae[k]	E	36	4	P	2,509	2·6	5·1	10·3	469	O	*Solan.*[e]	FC:PI
203a	*Atriplex nummularia* Lindl.	–[m]	Amaranthaceae	E	–[n]	–[p]	P	2,924	3·0	6·0	12·0	526	O	A	FC:PI
204a	*Atriplex portulacoides* L.	Yes	Amaranthaceae	E	36[o]	4	A	895	0·9	1·8	3·7	580	O	G[c]	CIA
205a	*Atriplex prostrata* Bouch. ex DC.	Yes	Amaranthaceae	E	18[o]	2	A	738	0·8	1·5	3·0	580	O	G[c]	CIA
206c	*Atriplex rosea* L.	No	Amaranthaceae[k]	E	–[n]	–[p]	A	1,037	1·1	2·1	4·2	492	O	*Raphanus*[e]	FC:PI
207a	*Atriplex semibaccata* R.Br.	–[m]	Amaranthaceae	E	–[n]	–[p]	P	831	0·9	1·7	3·4	526	O	A	FC:PI
208a	*Atriplex stipitata*[l]	–[m]	Amaranthaceae	E	–[n]	–[p]	–[q]	900	0·9	1·8	3·7	526	O	A	FC:PI
209a	*Atriplex vesicaria* Heward ex Benth.	–[m]	Amaranthaceae	E	–[n]	–[p]	P	1,462	1·5	3·0	6·0	526	O	A	FC:PI
210a	*Aubrieta deltoidea* (L.) DC.	Yes	Brassicaceae[j]	E	16	2	–[q]	411	0·4	0·8	1·7	599	O	L	FC:PI
211a	*Australopyrum calcis* Connor & Molloy subsp. *calcis*	Yes	Poaceae[j]	M	14	2	P	5,511	5·6	11·3	22·5	528	O	–[w]	FC:PI
211b	*Australopyrum calcis* Connor & Molloy subsp. *optatum*[i]	Yes	Poaceae[j]	M	14	2	P	5,672	5·8	11·6	23·2	528	O	–[w]	FC:PI
212a	*Austrodanthonia caespitosa* (Gaudich.) H.P.Linder	–[m]	Poaceae[j]	M	–[n]	–[p]	P	2,910	3·0	6·0	11·9	526	O	A	FC:PI
213a	*Austrofestuca littoralis* (Labill.) E.B.Alexeev.	Yes	Poaceae[j]	M	28[o]	4	P	3,628	3·7	7·4	14·8	528	O	–[w]	FC:PI
214a	*Austrostipa stipoides* (Hook.f.) S.W.L.Jacobs & J.Everett	Yes	Poaceae[j]	M	44	4	P	1,540	1·6	3·2	6·3	528	O	–[w]	FC:PI
215a	*Azorina vidalii* (H. C. Watson) Feer	–[m]	Campanulaceae	E	56	8	P	1,046	1·1	2·1	4·3	552	O	*Solan.*[e]	FC:PI
216a	*Banksia marginata*[l]	–[m]	Proteaceae	E	–[n]	–[p]	P	826	0·8	1·7	3·4	526	O	A	FC:PI
217a	*Barringtonia acutangula* (L.) Gaertn.	No	Lecythidaceae	E	26[o]	2	P	1,117	1·1	2·3	4·6	501[ag]	O	B[c]	Fe
218a	*Basella alba* L.	No	Basellaceae	E	c. 48	–[p]	P	1,753	1·8	3·6	7·2	612	O	J	Fe
219a	*Bauhinia blakeana* Dunn.	No	Fabaceae[j]	E	–[n]	–[p]	P	582	0·6	1·2	2·4	501[ag]	O	B[c]	Fe
220a	*Bauhinia galpinii* N.E.Br.	No	Fabaceae[j]	E	28[o]	2	P	641	0·7	1·3	2·6	501[ag]	O	B[c]	Fe

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
221a	*Bauhinia monandra* Kurz	No	Fabaceae[j]	E	24[o]	2	P	699	0·7	1·4	2·9	501[ag]	O	B[c]	Fe
222a	*Beaucarnea recurvata* Lemaire	No	Asparagaceae[k]	M	38[o]	–[p]	P	8,606	8·8	17·6	35·2	482	O	*Agave* sp.[e]	FC:PI
223a	*Berteroa incana* (L.) DC.	Yes	Brassicaceae[j]	E	16	2	–[q]	694	0·7	1·4	2·8	599	O	L	FC:PI
224f	*Beta vulgaris* L.	Yes	Amaranthaceae[k]	E	–[n]	–[p]	B	900	0·9	1·8	3·7	492	O	*Raphanus*[e]	FC:PI
225a	*Betula alba* L.	Yes	Betulaceae	E	–[n]	–[p]	P	880	0·9	1·8	3·6	489	O	–[w]	FC:EB
226a	*Billbergia nutans* H.Wendl.	Yes	Bromeliaceae	M	50[o]	2	P	368	0·4	0·8	1·5	571	O	*Glycine*[e]	FC:PI
227a	*Biscutella auriculata* L.	Yes	Brassicaceae[j]	E	16	2	–[q]	675	0·7	1·4	2·8	599	O	L	FC:PI
228a	*Biscutella didyma* L.	Yes	Brassicaceae[j]	E	16[o]	2	A	768	0·8	1·6	3·1	522	O	*Raphanus*[e]	FC:PI
229a	*Bituminaria bituminosa* (L.) C.H.Stirton[h]	No	Fabaceae[j]	E	20[o]	2	P	488	0·5	1·0	2·0	513[al]	O	*Glycine*[e]	FC:PI
229b	*Bituminaria bituminosa* (L.) C.H.Stirton[h]	No	Fabaceae[j]	E	20[o]	2	P	548	0·6	1·1	2·2	513[al]	O	*Glycine*[e]	FC:PI
230c	*Bixa orellana* L.	No[m]	Bixaceae	E	14[o]	2	P	203	0·2	0·4	0·8	501[ag]	O	B[c]	Fe
231a	*Boechera hoelbellii* Hornem.	Yes	Brassicaceae[j]	E	14, 21[o]	–[p]	–[q]	235	0·2	0·5	1·0	599	O	L	FC:PI
232a	*Boechera stricta* (Graham) Al-Shehbaz	Yes	Brassicaceae[j]	E	14, 21[o]	–[p]	–[q]	235	0·2	0·5	1·0	599	O	L	FC:PI
233a	*Boreava orientalis* Jaub. & Spach	Yes	Brassicaceae[j]	E	14	2	–[q]	362	0·4	0·7	1·5	599	O	L	FC:PI
234a	*Bornmuellera tymphaea* Hausskn.[i]	Yes	Brassicaceae[j]	E	16[o]	2	B	1,066	1·1	2·2	4·4	540	O	*Raphanus*[e]	FC:PI
235a	*Bosea yervamora* L.	–[m]	Amaranthaceae	E	36	4	P	1,609	1·6	3·3	6·6	552	O	*Glycine*[e]	FC:PI
236a	*Brachanthemum titovii* H.Kraschen.	Yes	Asteraceae[j]	E	18[o]	2	P	3,413	3·5	7·0	14·0	521	O	G[c]	FC:PI
237b	*Brachycome dichromosomatica* C.R.Carter	No	Asteraceae[j]	E	–[n]	–[p]	A	1,507	1·5	3·1	6·2	518	O	*Raphanus*[e]	FC:PI
238a	*Brachypodium arbuscula* Knoche	–[m]	Poaceae[j]	M	18	2	P	337	0·3	0·7	1·4	552	O	*Raphanus*[e]	FC:PI
239d	*Brachypodium distachyon* (L.) P.Beauv.	No	Poaceae[j]	M	–[n]	–[p]	A	768	0·8	1·6	3·1	518	O	*Glycine*[e]	FC:PI
239e	*Brachypodium distachyon* (L.) P.Beauv. inbred line Bd21	No	Poaceae	M	10	2	A	271	0·3	0·6	1·1	615	O	–[ax]	GS
240b	*Brachypodium sylvaticum* (Huds.) P.Beauv.	No	Poaceae[j]	M	–[n]	–[p]	P	529	0·5	1·1	2·2	518	O	*Glycine*[e]	FC:PI
241c	*Brassia maculata* R.Br.	Yes	Orchidaceae	M	–[n]	–[p]	P	3,619	3·7	7·4	14·8	504[ah]	O	–[w]	FC:DAPI
242b	*Brassica carinata* L.	–[m]	Brassicaceae[j]	E	34[o]	4	A	1,279	1·3	2·6	5·2	509	O	–[w]	FC:PI
243c	*Brassica juncea* (L.) Czern.	–[m]	Brassicaceae[j]	E	36[o]	4	–[q]	1,068	1·1	2·2	4·4	509	O	–[w]	FC:PI
244f	*Brassica napus* L.	No	Brassicaceae[j]	E	–[n]	–[p]	AB	1,443	1·5	3·0	5·9	492	O	*Raphanus*[e]	FC:PI
244g	*Brassica napus* L.	–[m]	Brassicaceae[j]	E	38[o]	4	–[q]	1,129	1·2	2·3	4·6	509	O	–[w]	FC:PI
245c	*Brassica nigra* (L.) Koch	–[m]	Brassicaceae[j]	E	16[o]	2	A	633	0·6	1·3	2·6	509	O	–[w]	FC:PI
246h	*Brassica oleracea* L.	–[m]	Brassicaceae[j]	E	18[o]	–[p]	BP	694	0·7	1·4	2·8	509	O	–[w]	FC:PI
247b	*Brassica rapa* L.	–[m]	Brassicaceae[j]	E	20[o]	–[p]	B	527	0·5	1·1	2·2	509	O	–[w]	FC:PI
248a	*Brocchinia acuminata* L.B.Sm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	372	0·4	0·8	1·5	575	O	*Raphanus*[e]	FC:PI
249a	*Brocchinia tatei* L.B.Sm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	381	0·4	0·8	1·6	575	O	*Raphanus*[e]	FC:PI

250a	*Brocchinia uaipanensis* (Maguire) Givnish	Yes	Bromeliaceae	M	–[n]	–[p]	P	421	0·4	0·9	1·7	575	O	*Raphanus*[e]	FC:PI
251a	*Bromus arenarius* Labill.	Yes	Poaceae[j]	M	28	4	P	8,044	8·2	16·5	32·9	528	O	–[w]	FC:PI
252a	*Bromus ciliatus* L.	No[m1]	Poaceae[j]	M	28	4	P	9,355	9·6	19·1	38·3	595	O	A[c]	FC:PI
253a	*Bromus erectus* Huds.	No[m1]	Poaceae[j]	M	14	2	P	3,027	3·1	6·2	12·4	594	O	F[c]	FC:PI
254a	*Bromus variegatus* M.Bieb.	No[m1]	Poaceae[j]	M	14	2	P	3,306	3·4	6·8	13·5	594	O	F[c]	FC:PI
255a	*Bryonia verrucosa* Dryand.	–[m]	Cucurbitaceae	E	20[o]	2	P	1,022	1·0	2·1	4·2	552	O	*Solan.*[e]	FC:PI
256c	*Bunias erucago* L.	Yes	Brassicaceae[j]	E	14	2	A	2,024	2·1	4·1	8·3	599	O	L	FC:PI
257c	*Bunias orientalis* L.	Yes	Brassicaceae[j]	E	14	2	P	2,377	2·4	4·9	9·7	599	O	L	FC:PI
258a	*Bupleurum salicifolium* R.Br in Buch subsp. *aciphyllum*	–[m]	Apiaceae[j]	E	32[o]	4	P	773	0·8	1·6	3·2	477	O	*Solan.*[e]	FC:PI
259a	*Butea monosperma* (Lam.) Taub.	No	Fabaceae[j]	E	18[o]	2	P	548	0·6	1·1	2·2	501[ag]	O	B[c]	Fe
260a	*Bystropogon canariensis* (L.) L'Hér.	–[m]	Lamiaceae[j]	E	42[o]	6	P	538	0·6	1·1	2·2	552	O	*Solan.*[e]	FC:PI
261a	*Caesalpinia mexicana* A.Gray	No	Fabaceae[j]	E	–[n]	–[p]	P	1,958	2·0	4·0	8·0	501[ag]	O	B[c]	Fe
262a	*Caesalpinia pulcherrima* (L.) Sw.	No	Fabaceae[j]	E	28[o]	2	P	1,760	1·8	3·6	7·2	501[ag]	O	B[c]	Fe
263a	*Cakile maritima* Scop.	Yes	Brassicaceae[j]	E	18	–[p]	–[q]	665	0·7	1·4	2·7	599	O	L	FC:PI
264a	*Calandrinia polyandra* (Hook.) Benth.	–[m]	Portulacaceae	E	–[n]	–[p]	A	1,046	1·1	2·1	4·3	526	O	A	FC:PI
265a	*Calepina irregularis* (Asso) Thell.	Yes	Brassicaceae[j]	E	14	2	AB	205	0·2	0·4	0·8	599	O	L	FC:PI
266b	*Calibanus hookeri* (Lemaire) Trelease	No	Asparagaceae[k]	M	38[o]	–[p]	P	8,851	9·1	18·1	36·2	482	O	*Agave* sp.[e]	FC:PI
267c	*Camassia cusickii* S.Watson	No	Asparagaceae[k]	M	30[o]	–[p]	P	2,249	2·3	4·6	9·2	482	O	*Agave* sp.[e]	FC:PI
268a	*Campanula americana* L.[h]	No	Campanulaceae	E	58	4	AB	2,015	2·1	4·1	8·2	486	O	*Gallus*[f]	FC:PI
268b	*Campanula americana* L.[h]	No	Campanulaceae	E	58	4	AB	2,166	2·2	4·4	8·9	486	O	*Gallus*[f]	FC:PI
269a	*Campylanthus salsoloides* (L. f.) Roth	–[m]	Plantaginaceae[k]	E	14[o]	2	P	743	0·8	1·5	3·0	552	O	*Solan.*[e]	FC:PI
270a	*Canarina canariensis* (L.) Vatke	–[m]	Campanulaceae	E	34[o]	4	P	2,792	2·9	5·7	11·4	477	O	G[c]	FC:PI
271a	*Capsella bursa-pastoris* (L.) Medic.	Yes	Brassicaceae[j]	E	32	4	A	391	0·4	0·8	1·6	599	O	L	FC:PI
271b	*Capsella bursa-pastoris* (L.) Medic.	–[m]	Brassicaceae[j]	E	32	4	A	405	0·4	0·8	1·7	509	O	–[w]	FC:PI
272a	*Capsella rubella* Reuter	Yes	Brassicaceae[j]	E	16	2	–[q]	215	0·2	0·4	0·9	599	O	L	FC:PI
272b	*Capsella rubella* Reuter	–[m]	Brassicaceae[j]	E	16	2	–[q]	251	0·3	0·5	1·0	509	O	–[w]	FC:PI
273a	*Capsicum annuum* L. var. *annuum*	Yes	Solanaceae	E	24[o]	2	AB	3,090	3·2	6·3	12·6	481	O	F[c]	Fe
273j	*Capsicum annuum* L. var. *annuum*[i]	Yes	Solanaceae	E	24[o]	2	AB	3,306	3·4	6·8	13·5	481	O	F[c]	FC:EB
274a	*Capsicum baccatum* L. var. *baccatum*	Yes	Solanaceae	E	24[o]	2	P	3,628	3·7	7·4	14·8	481	O	F[c]	FC:EB
274f	*Capsicum baccatum* L. var. *pendulum*[i]	Yes	Solanaceae	E	24[o]	2	P	3,599	3·7	7·4	14·7	481	O	F[c]	FC:EB
274g	*Capsicum baccatum* L. var. *umbilicatum*[i]	Yes	Solanaceae	E	24[o]	2	P	3,628	3·7	7·4	14·8	481	O	F[c]	FC:EB

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
275a	*Capsicum campylopodium* Sendtn. (cytotype 2)[h]	Yes	Solanaceae	E	26[o]	2	–[q]	4,430	4·5	9·1	18·1	481	O	F[c]	FC:EB
275b	*Capsicum campylopodium* Sendtn. (cytotype 1)[h]	Yes	Solanaceae	E	26[o]	2	–[q]	5,614	5·7	11·5	23·0	481	O	F[c]	FC:EB
276b	*Capsicum chacoense* Hunz.[i]	Yes	Solanaceae	E	24[o]	2	–[q]	3,276	3·4	6·7	13·4	481	O	F[c]	FC:EB
277a	*Capsicum chinense* Jacq.[i]	Yes	Solanaceae	E	24[o]	2	–[q]	3,345	3·4	6·8	13·7	481	O	F[c]	FC:EB
278a	*Capsicum eximium* Hunz.[i]	Yes	Solanaceae	E	24[o]	2	–[q]	3,971	4·1	8·1	16·2	481	O	F[c]	FC:EB
279a	*Capsicum frutescens* L.	Yes	Solanaceae	E	24[o]	2	–[q]	3,325	3·4	6·8	13·6	481	O	F[c]	FC:EB
279c	*Capsicum frutescens* L.	Yes	Solanaceae	E	–[n]	–[p]	A	3,604	3·7	7·4	14·7	492	O	G[c]	FC:PI
280a	*Capsicum parvifolium* Sendtn.	Yes	Solanaceae	E	24[o]	2	–[q]	5,643	5·8	11·5	23·1	481	O	F[c]	FC:EB
281a	*Capsicum pubescens* Ruiz. & Pav.[i]	Yes	Solanaceae	E	24[o]	2	–[q]	4,372	4·5	8·9	17·9	481	O	F[c]	FC:EB
281b	*Capsicum pubescens* Ruiz. & Pav.	Yes	Solanaceae	E	24[o]	2	–[q]	4,460	4·6	9·1	18·2	481	O	F[c]	Fe
282c	*Cardamine amara* L.	No	Brassicaceae[j]	E	–[n]	–[p]	P	289	0·3	0·6	1·2	518	O	*Raphanus*[e]	FC:PI
282d	*Cardamine amara* L.	–[m]	Brassicaceae[j]	E	16[o]	–[p]	–[q]	220	0·2	0·5	0·9	509	O	–[w]	FC:PI
282e	*Cardamine amara* L. subsp. *amara*	Yes	Brassicaceae[j]	E	16	2	P	245	0·3	0·5	1·0	537	O	*Solan.*[e]	FC:PI
283a	*Cardamine asarifolia* L.[i]	Yes	Brassicaceae[j]	E	48	6	P	1,306	1·3	2·7	5·3	537	O	*Solan.*[e]	FC:PI
284b	*Cardamine hirsuta* L.	–[m]	Brassicaceae[j]	E	16	–[p]	–[q]	224	0·2	0·5	0·9	509	O	–[w]	FC:PI
285a	*Cardamine impatiens* L.	–[m]	Brassicaceae[j]	E	16	–[p]	–[q]	207	0·2	0·4	0·8	509	O	–[w]	FC:PI
286a	*Cardamine* × *ferrarii* Burnat	Yes	Brassicaceae[j]	E	c. 40	5	P	–[t]	–[t]	2·0	4·0	537	O	*Glycine*[e]	FC:PI
287a	*Cardaminopsis arenosa* (L.) Hayek	No	Brassicaceae[j]	E	–[n]	–[p]	AP	489	0·5	1·0	2·0	518	O	*Raphanus*[e]	FC:PI
288a	*Cardiocrinum giganteum* (Wall.) Makino	Yes	Liliaceae	M	24	2	P	37,775	38·6	77·3	154·5	565	O	B	Fe
289c	*Carica papaya* L.	No	Caricaceae	E	18[o]	2	P	403	0·4	0·8	1·7	501[ag]	O	B[c]	Fe
290a	*Carlina salicifolia* (L. f.) Cav.	–[m]	Asteraceae[j]	E	20[o]	2	P	3,413	3·5	7·0	14·0	552	O	H[c]	FC:PI
291a	*Carlina xeranthemoides* L.f.	–[m]	Asteraceae[j]	E	20	2	P	3,477	3·6	7·1	14·2	477	O	H[c]	FC:PI
292a	*Carrichtera annua* (L.) DC.	Yes	Brassicaceae[j]	E	16	2	–[q]	655	0·7	1·3	2·7	599	O	L	FC:PI
293a	*Carthamus alexandrinus* (Boiss. & Heldr.) Asch.[i]	Yes	Asteraceae[j]	E	20	2	A	1,496	1·5	3·1	6·1	536	O	G[c]	FC:PI
294a	*Carthamus anatolicus* (Boiss.) G.Samuelsson in Rech.f.[i]	Yes	Asteraceae[j]	E	20	2	A	1,462	1·5	3·0	6·0	536	O	G[c]	FC:PI
295a	*Carthamus boissieri* Halácsy[i]	Yes	Asteraceae[j]	E	20	2	A	1,443	1·5	3·0	5·9	536	O	G[c]	FC:PI
296a	*Carthamus creticus* L.[i]	Yes	Asteraceae[j]	E	64	6	A	3,452	3·5	7·1	14·1	536	O	*Petunia*[e]	FC:PI

297a	*Carthamus dentatus* (Link) Hanelt subsp. *ruber*	Yes	Asteraceae[j]	E	20	2	A	1,320	1·4	2·7	5·4	536	O	G[c]	FC:PI
298a	*Carthamus glaucus* M.Bieb. subsp. *glaucus*	Yes	Asteraceae[j]	E	20	2	A	1,467	1·5	3·0	6·0	536	O	G[c]	FC:PI
299a	*Carthamus gypsicola* Iljin	Yes	Asteraceae[j]	E	24	2	A	1,325	1·4	2·7	5·4	536	O	G[c]	FC:PI
300a	*Carthamus lanatus* L.	Yes	Asteraceae[j]	E	44	4	A	2,347	2·4	4·8	9·6	536	O	G[c]	FC:PI
300b	*Carthamus lanatus* L. subsp. *montanus*	Yes	Asteraceae[j]	E	44	4	A	2,362	2·4	4·8	9·7	536	O	G[c]	FC:PI
301a	*Carthamus leucocaulos* Sibth. & Sm.	Yes	Asteraceae[j]	E	20	2	A	1,105	1·1	2·3	4·5	536	O	G[c]	FC:PI
302a	*Carthamus nitidus* Boiss.	Yes	Asteraceae[j]	E	24	2	A	1,193	1·2	2·4	4·9	536	O	G[c]	FC:PI
303a	*Carthamus oxyacantha* M. Bieb.[i]	Yes	Asteraceae[j]	E	24	2	A	1,281	1·3	2·6	5·2	536	O	G[c]	FC:PI
304a	*Carthamus palaestinus* Eig	Yes	Asteraceae[j]	E	24	2	A	1,379	1·4	2·8	5·6	536	O	G[c]	FC:PI
305a	*Carthamus persicus* Desf. ex Willd.	Yes	Asteraceae[j]	E	24	2	A	1,296	1·3	2·7	5·3	536	O	G[c]	FC:PI
306a	*Carthamus tenuis* (Boiss. & Blanche) Bornm.	Yes	Asteraceae[j]	E	20	2	A	1,340	1·4	2·7	5·5	536	O	G[c]	FC:PI
307a	*Carthamus tinctorius* L.[i]	Yes	Asteraceae[j]	E	24	2	A	1,364	1·4	2·8	5·6	536	O	G[c]	FC:PI
308a	*Carthamus turkestanicus* Popov[i]	Yes	Asteraceae[j]	E	64	6	A	3,648	3·7	7·5	14·9	536	O	G[c]	FC:PI
309a	*Casearia bowrdillonii* Mukherjee	No	Salicaceae[k]	E	–[n]	–[p]	P	614	0·6	1·3	2·5	501[ag]	O	B[c]	Fe
310a	*Castanea sativa* Miller	No	Fagaceae	E	–[n]	–[p]	P	958	1·0	2·0	3·9	492	O	*Raphanus*[e]	FC:PI
310b	*Castanea sativa* Miller	Yes	Fagaceae	E	–[n]	–[p]	P	753	0·8	1·5	3·1	489	O	–[w]	FC:EB
311a	*Castellia tuberculosa* (Moris) Bor	–[m]	Poaceae[j]	M	14[o]	2	P	3,087	3·2	6·3	12·6	555	O	G[c]	FC:PI
312a	*Caulanthus amplexicaulis* S.Wats var. *barbarae*	–[m]	Brassicaceae[j]	E	28[o]	–[p]	A	369	0·4	0·8	1·5	509	O	–[w]	FC:PI
313a	*Caulanthus heterophyllus* (Nutt.) Payson var. *pseudosimulans* R.Buck	–[m]	Brassicaceae[j]	E	28[o]	–[p]	–[q]	672	0·7	1·4	2·7	509	O	–[w]	FC:PI
313b	*Caulanthus heterophyllus* (Nutt.) Payson var. *heterophyllus*	–[m]	Brassicaceae[j]	E	28[o]	–[p]	–[q]	686	0·7	1·4	2·8	509	O	–[w]	FC:PI
314a	*Ceballosia fruticosa* (Lam.) G. Kunkel (L. f.) G. Kunkel var. *angustifolia*	–[m]	Boraginaceae	E	16[o]	2	P	1,159	1·2	2·4	4·7	552	O	*Solan.*[e]	FC:PI
315a	*Ceiba pentandra* (L.) Gaertn.	No	Malvaceae	E	86[o]	2	P	1,712	1·8	3·5	7·0	501[ag]	O	A[c]	Fe
316b	*Celtis australis* L.	No	Cannabaceae[k]	E	–[n]	–[p]	P	1,203	1·2	2·5	4·9	585	O	H[c]	FC:PI
317a	*Cenchrus caliculatus* Cav.	Yes	Poaceae[j]	M	102	6	A	5,438	5·6	11·1	22·2	528	O	–[w]	FC:PI
318a	*Centaurea alba* L.	Yes	Asteraceae[j]	E	36	4	P	1,751	1·8	3·6	7·2	529	O	G[c]	CIA
319a	*Centaurea arenaria* Bieb. ex Willd.	Yes	Asteraceae[j]	E	32	4	P	1,604	1·6	3·3	6·6	529	O	G[c]	CIA
320a	*Centaurea cuneifolia* Sibth. & Sm.	Yes	Asteraceae[j]	E	18	2	P	870	0·9	1·8	3·6	529	O	G[c]	CIA
321a	*Centaurea cuneifolia* Sibth. & Sm.	Yes	Asteraceae[j]	E	36	4	P	1,584	1·6	3·2	6·5	529	O	G[c]	CIA
322a	*Centaurea cuspidata* Vis.[i]	Yes	Asteraceae[j]	E	18	2	P	1,061	1·1	2·2	4·3	598	O	*Petunia*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
323a	*Centaurea davidovii* Urumov	Yes	Asteraceae[j]	E	44	4	P	2,022	2·1	4·1	8·3	529	O	G[c]	CIA
324a	*Centaurea debeauxii* Gren. & Gordon	Yes	Asteraceae[j]	E	44	4	P	2,103	2·2	4·3	8·6	529	O	G[c]	CIA
325a	*Centaurea deusta* Ten.	Yes	Asteraceae[j]	E	18	2	P	817	0·8	1·7	3·3	598	O	*Petunia*[e]	FC:PI
326a	*Centaurea diffusa* Lam.	Yes	Asteraceae[j]	E	16	2	P	880	0·9	1·8	3·6	529	O	G[c]	CIA
327a	*Centaurea edith-mariae* Radic	Yes	Asteraceae[j]	E	36	4	P	1,775	1·8	3·6	7·3	598	O	*Petunia*[e]	FC:PI
328a	*Centaurea elegantissima* Radic	Yes	Asteraceae[j]	E	36	4	P	1,819	1·9	3·7	7·4	598	O	*Petunia*[e]	FC:PI
329a	*Centaurea glaberrima* Tausch[h]	Yes	Asteraceae[j]	E	36	4	P	1,560	1·6	3·2	6·4	598	O	*Petunia*[e]	FC:PI
329b	*Centaurea glaberrima* Tausch[h]	Yes	Asteraceae[j]	E	36	4	P	1,643	1·7	3·4	6·7	598	O	*Petunia*[e]	FC:PI
330a	*Centaurea gloriosa* var. *multiflora* Radic	Yes	Asteraceae[j]	E	18	2	P	1,061	1·1	2·2	4·3	598	O	*Petunia*[e]	FC:PI
330b	*Centaurea gloriosa* Radic var. *gloriosa*	Yes	Asteraceae[j]	E	18	2	P	1,066	1·1	2·2	4·4	598	O	*Petunia*[e]	FC:PI
331a	*Centaurea indurata* Janka	Yes	Asteraceae[j]	E	44	4	P	1,868	1·9	3·8	7·6	529	O	G[c]	CIA
332a	*Centaurea jacea* L.	Yes	Asteraceae[j]	E	44	4	P	1,956	2·0	4·0	8·0	529	O	G[c]	CIA
333a	*Centaurea kernerana* Janka	Yes	Asteraceae[j]	E	22	2	P	993	1·0	2·0	4·1	529	O	G[c]	CIA
334a	*Centaurea kusanii* Radic	Yes	Asteraceae[j]	E	36 + 1B	4	P	1,790	1·8	3·7	7·3	598	O	*Petunia*[e]	FC:PI
335a	*Centaurea mayeri* Radic	Yes	Asteraceae[j]	E	36	4	P	1,731	1·8	3·5	7·1	598	O	*Petunia*[e]	FC:PI
336a	*Centaurea moesiaca* Urumov & H. Wagner	Yes	Asteraceae[j]	E	44	4	P	1,992	2·0	4·1	8·1	529	O	G[c]	CIA
337a	*Centaurea nervosa* Willd. subsp. *nervosa*	Yes	Asteraceae[j]	E	22	2	P	1,056	1·1	2·2	4·3	529	O	G[c]	CIA
338a	*Centaurea nervosa* (Halascy) Dostal subsp. *gheorghieffii*	Yes	Asteraceae[j]	E	44	4	P	2,034	2·1	4·2	8·3	529	O	G[c]	CIA
339a	*Centaurea nigrescens* Willd.	Yes	Asteraceae[j]	E	44	4	P	1,858	1·9	3·8	7·6	529	O	G[c]	CIA
340a	*Centaurea ovina* (DC.) Dostal subsp. *besserana*	Yes	Asteraceae[j]	E	18	2	P	861	0·9	1·8	3·5	529	O	G[c]	CIA
341a	*Centaurea parilica* Stoj. & Stefanov	Yes	Asteraceae[j]	E	22	2	P	1,066	1·1	2·2	4·4	529	O	G[c]	CIA
342a	*Centaurea ragusina* L. subsp. *lungensis* (Ginzberger) Hayek	Yes	Asteraceae[j]	E	20	2	P	1,619	1·7	3·3	6·6	598	O	*Petunia*[e]	FC:PI
342b	*Centaurea ragusina* L. subsp. *ragusina*	Yes	Asteraceae[j]	E	20	2	P	1,677	1·7	3·4	6·9	598	O	*Petunia*[e]	FC:PI
343a	*Centaurea rupestris* L. *s.l.*	Yes	Asteraceae[j]	E	20	2	P	1,139	1·2	2·3	4·7	598	O	*Petunia*[e]	FC:PI
344a	*Centaurea solstitialis* L.	Yes	Asteraceae[j]	E	16	2	A	851	0·9	1·7	3·5	529	O	G[c]	CIA
345a	*Centaurea stenolepis* A. Kerner	Yes	Asteraceae[j]	E	22	2	P	1,056	1·1	2·2	4·3	529	O	G[c]	CIA
346a	*Centaurea stenolepis* A. Kerner	Yes	Asteraceae[j]	E	44	4	P	2,015	2·1	4·1	8·2	529	O	G[c]	CIA

347a	*Centaurea stoebe* L.	Yes	Asteraceae[j]	E	18	2	P	864	0·9	1·8	3·5	529	O	G[c]	CIA
348a	*Centaurea stoebe* L.	Yes	Asteraceae[j]	E	36	4	P	1,535	1·6	3·1	6·3	529	O	G[c]	CIA
349a	*Centaurea tuberosa* Vis.	Yes	Asteraceae[j]	E	22	2	P	1,315	1·3	2·7	5·4	598	O	*Petunia*[e]	FC:PI
350a	*Centaurea visiani* Radic subsp. *pumilla*	Yes	Asteraceae[j]	E	18	2	P	1,051	1·1	2·2	4·3	598	O	*Petunia*[e]	FC:PI
350b	*Centaurea visiani* Radic subsp. *visiani*	Yes	Asteraceae[j]	E	18	2	P	1,071	1·1	2·2	4·4	598	O	*Petunia*[e]	FC:PI
350c	*Centaurea visiani* Radic *s.l.*	Yes	Asteraceae[j]	E	18	2	P	1,051	1·1	2·2	4·3	598	O	*Petunia*[e]	FC:PI
351a	*Ceropegia dichotoma* Haw.	–[m]	Apocynaceae	E	22[o]	2	P	435	0·4	0·9	1·8	477	O	*Raphanus*[e]	FC:PI
352a	*Ceropegia fusca* Bolle	–[m]	Apocynaceae	E	22[o]	2	P	421	0·4	0·9	1·7	477	O	*Raphanus*[e]	FC:PI
353a	*Chamaecytisus proliferus* (L. f.) Link subsp. *proliferus*	–[m]	Fabaceae[j]	E	48[o]	4	P	1,218	1·2	2·5	5·0	552	O	*Solan.*[e]	FC:PI
354a	*Chardinia orientalis* (L.) Kuntze	Yes	Asteraceae[j]	E	22	2	A	1,834	1·9	3·8	7·5	502	O	G[c]	FC:PI
355a	*Cheiranthus cheiri* L.	Yes	Brassicaceae[j]	E	14	2	–[q]	254	0·3	0·5	1·0	599	O	L	FC:PI
356a	*Cheirolophus canariensis* (Brouss. ex Willd.) Holub. var. *subexpinnatus* (Burchard) Hansen & Sunding	–[m]	Asteraceae[j]	E	30[o]	>2	P	675	0·7	1·4	2·8	552	O	*Solan.*[e]	FC:PI
357a	*Cheirolophus teydis* (Chr. Sm. in Buch) G.Lopez	–[m]	Asteraceae[j]	E	~30	≥ 2	P	699	0·7	1·4	2·9	477	O	*Solan.*[e]	FC:PI
358a	*Chenopodium coronopus* Moq. in DC.	–[m]	Amaranthaceae	E	18	2	A	469	0·5	1·0	1·9	552	O	*Solan.*[e]	FC:PI
359a	*Chenopodium desertorum* J.M.Black	–[m]	Amaranthaceae	E	–[n]	–[p]	P	1,076	1·1	2·2	4·4	526	O	A	FC:PI
360a	*Chionochloa antarctica* (Hook.f.) Zotov	Yes	Poaceae[j]	M	42	6	P	2,597	2·7	5·3	10·6	528	O	–[w]	FC:PI
361a	*Chionochloa australis* (Buchanan) Zotov	Yes	Poaceae[j]	M	42	6	P	2,166	2·2	4·4	8·9	528	O	–[w]	FC:PI
362a	*Chionochloa bromoides* (Hook.f.) Zotov	Yes	Poaceae[j]	M	42	6	P	2,978	3·0	6·1	12·2	528	O	–[w]	FC:PI
363a	*Chionochloa cheesemanii* (Hack.) Zotov	Yes	Poaceae[j]	M	42	6	P	2,675	2·7	5·5	10·9	528	O	–[w]	FC:PI
364a	*Chionochloa conspicua* (Hook.f.) Zotov subsp. *cunninghamii*	–[m]	Poaceae[j]	M	42	6	P	3,095	3·2	6·3	12·7	528	O	–[w]	FC:PI
365a	*Chionochloa crassiuscula* (Kirk) Zotov subsp. *crassiuscula*	Yes	Poaceae[j]	M	42	6	P	2,445	2·5	5·0	10·0	528	O	–[w]	FC:PI
366a	*Chionochloa flavescens* Connor subsp. *brevis*	Yes	Poaceae[j]	M	42	6	P	2,528	2·6	5·2	10·3	528	O	–[w]	FC:PI
366b	*Chionochloa flavescens* Connor subsp. *lupeola*	Yes	Poaceae[j]	M	42	6	P	2,601	2·7	5·3	10·6	528	O	–[w]	FC:PI
367a	*Chionochloa flavicans* Zotov f. *flavicans*	Yes	Poaceae[j]	M	42	6	P	3,702	3·8	7·6	15·1	528	O	–[w]	FC:PI
367b	*Chionochloa flavicans* Zotov f. *tenata*	Yes	Poaceae[j]	M	42	6	P	3,800	3·9	7·8	15·5	528	O	–[w]	FC:PI
368a	*Chionochloa juncea* Zotov	Yes	Poaceae[j]	M	42	6	P	2,631	2·7	5·4	10·8	528	O	–[w]	FC:PI
369a	*Chionochloa lanea* Connor	Yes	Poaceae[j]	M	42	6	P	2,474	2·5	5·1	10·1	528	O	–[w]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
370a	*Chionochloa macra* Zotov	Yes	Poaceae[j]	M	42	6	P	2,450	2·5	5·0	10·0	528	O	–[w]	FC:PI
371a	*Chionochloa pallens* Zotov subsp. *pallens*	Yes	Poaceae[j]	M	42	6	P	2,509	2·6	5·1	10·3	528	O	–[w]	FC:PI
372a	*Chionochloa rigida* (Raoul) Zotov subsp. *rigida*	Yes	Poaceae[j]	M	42	6	P	2,479	2·5	5·1	10·1	528	O	–[w]	FC:PI
373a	*Chionochloa rubra* Zotov subsp. *rubra* var. *rubra*	Yes	Poaceae[j]	M	42	6	P	2,513	2·6	5·1	10·3	528	O	–[w]	FC:PI
373b	*Chionochloa rubra* Zotov subsp. *rubra* var. *inermis*	Yes	Poaceae[j]	M	42	6	P	2,621	2·7	5·4	10·7	528	O	–[w]	FC:PI
374a	*Chionochloa spiralis* Zotov	Yes	Poaceae[j]	M	42	6	P	2,499	2·6	5·1	10·2	528	O	–[w]	FC:PI
375a	*Chionochloa vireta* Connor	Yes	Poaceae[j]	M	42	6	P	2,430	2·5	5·0	9·9	528	O	–[w]	FC:PI
376a	*Chorispora tenella* (Pall.) DC.	Yes	Brassicaceae[j]	E	14	2	–[q]	342	0·4	0·7	1·4	599	O	L	FC:PI
377a	*Christolea crassifolia* Cambess.	Yes	Brassicaceae[j]	E	14	2	–[q]	1,379	1·4	2·8	5·6	599	O	L	FC:PI
378b	*Chrysanthemum multicolor* Hyl.	Yes	Asteraceae[j]	E	–[n]	–[p]	A	15,917	16·3	32·6	65·1	492	O	C[c]	FC:PI
379a	*Chrysochamela velutina* (DC.) Boiss.	Yes	Brassicaceae[j]	E	22[o]	–[p]	–[q]	342	0·4	0·7	1·4	599	O	L	FC:PI
380a	*Cirsium acaule* (L.) Scop.	Yes	Asteraceae[j]	E	34[o]	2	P	1,281	1·3	2·6	5·2	472[ab]	O	*Solan.*[e]	FC:PI
381a	*Cirsium arvense* (L.) Scop.	Yes	Asteraceae[j]	E	34[o]	2	P	1,389	1·4	2·8	5·7	472[ab]	O	*Solan.*[e]	FC:PI
382a	*Cirsium brachycephalum* Juratzka	Yes	Asteraceae[j]	E	34	2	B	1,457	1·5	3·0	6·0	472[ab]	O	*Solan.*[e]	FC:PI
383a	*Cirsium canum* (L.) All.	Yes	Asteraceae[j]	E	34[o]	2	P	1,095	1·1	2·2	4·5	472[ab]	O	*Solan.*[e]	FC:PI
384a	*Cirsium eriophorum* (L.) Scop.	Yes	Asteraceae[j]	E	34[o]	2	B	1,760	1·8	3·6	7·2	472[ab]	O	*Solan.*[e]	FC:PI
385a	*Cirsium erisithales* (Jacq.) Scop.	Yes	Asteraceae[j]	E	34[o]	2	P	1,139	1·2	2·3	4·7	472[ab]	O	*Solan.*[e]	FC:PI
386a	*Cirsium heterophyllum* (L.) Hill	Yes	Asteraceae[j]	E	34[o]	2	P	1,046	1·1	2·1	4·3	472[ab]	O	*Solan.*[e]	FC:PI
387a	*Cirsium oleraceum* (L.) Scop.	Yes	Asteraceae[j]	E	34[o]	2	P	1,134	1·2	2·3	4·6	472[ab]	O	*Solan.*[e]	FC:PI
388a	*Cirsium palustre* (L.) Scop.	Yes	Asteraceae[j]	E	34[o]	2	B	1,262	1·3	2·6	5·2	472[ab]	O	*Solan.*[e]	FC:PI
389a	*Cirsium pannonicum* Link	Yes	Asteraceae[j]	E	34[o]	2	P	1,193	1·2	2·4	4·9	472[ab]	O	*Solan.*[e]	FC:PI
390a	*Cirsium rivulare* (Jacq.) All.	Yes	Asteraceae[j]	E	34[o]	2	P	1,174	1·2	2·4	4·8	472[ab]	O	*Solan.*[e]	FC:PI
391a	*Cirsium rivulare* (Jacq.) All.	Yes	Asteraceae[j]	E	c. 51	3	P	–[t]	–[t]	3·4	6·9	472[ab]	O	*Solan.*[e]	FC:PI
392a	*Cirsium spinosissimum* (L.) Scop.	Yes	Asteraceae[j]	E	34[o]	2	P	1,237	1·3	2·5	5·1	472[ab]	O	*Solan.*[e]	FC:DAPI

393a	*Cirsium vulgare* (Savi) Ten.	Yes	Asteraceae[j]	E	68[o]	4	B	2,709	2·8	5·5	11·1	472[ab]	O	*Solan.*[e]	FC:PI
394a	*Cistanche phelypaea* (L.) Coutinho subsp. *phelypaea*[i]	Yes	Orobanchaceae	E	40	2	P	8,729	8·9	17·9	35·7	531	O	G[c]	CIA
394b	*Cistanche phelypaea* (L.) Coutinho subsp. *lutea*[i]	Yes	Orobanchaceae	E	40	2	AP	9,716	9·9	19·9	39·7	531	O	G[c]	CIA
395a	*Cistus ladaniferus* L.	Yes	Cistaceae	E	–[n]	–[p]	P	856	0·9	1·8	3·5	489	O	–[w]	FC:EB
396c	*Citrus aurantium* L.	Yes	Rutaceae	E	–[n]	–[p]	P	435	0·4	0·9	1·8	489	O	–[w]	FC:EB
397c	*Citrus limon* (L.) Burm. f.	Yes	Rutaceae	E	–[n]	–[p]	P	435	0·4	0·9	1·8	489	O	–[w]	FC:EB
397d	*Citrus limon* (L.) Burm.f.	No	Rutaceae	E	–[n]	–[p]	P	411	0·4	0·8	1·7	563	O	*Solan.*[e]	FC:PI
398h	*Citrus sinensis*[l]	No	Rutaceae	E	–[n]	–[p]	P	425	0·4	0·9	1·7	563	O	*Solan.*[e]	FC:PI
399a	*Cleome hassleriana* Chodat	–[m]	Cleomaceae	E	20	–[p]	–[q]	300	0·3	0·6	1·2	509	O	–[w]	FC:PI
400a	*Coccoloba uvifera* (L.) L.	No	Polygonaceae	E	–[n]	–[p]	P	1,890	1·9	3·9	7·7	501[ag]	O	B[c]	Fe
401a	*Cochlearia aucheri* Boiss.	Yes	Brassicaceae[j]	E	–[n]	–[p]	B	293	0·3	0·6	1·2	522	O	*Raphanus*[e]	FC:PI
402a	*Cochlearia borzaeana* (Coman & Nyár.) Pobed.[i]	Yes	Brassicaceae[j]	E	48	8	P	1,382	1·4	2·8	5·7	546	O	*Solan.*[e]	FC:PI
403a	*Cochlearia danica* L.	Yes	Brassicaceae[j]	E	(33), 42[o]	–[p]	–[q]	685	0·7	1·4	2·8	599	O	L	FC:PI
404a	*Cochlearia officinalis* L.	Yes	Brassicaceae[j]	E	32	4	–[q]	734	0·8	1·5	3·0	599	O	L	FC:PI
405b	*Cochlearia pyrenaica* DC.[i, aq]	Yes	Brassicaceae[j]	E	12	2	P	383	0·4	0·8	1·6	546[aq]	O	*Raphanus*[e]	FC:PI
405c	*Cochlearia pyrenaica* s.l.[aq]	Yes	Brassicaceae[j]	E	12	2	P	445	0·5	0·9	1·8	546[aq]	O	*Solan.*[e]	FC:PI
406a	*Cochlearia sempervivum* Boiss. & Bal.	Yes	Brassicaceae[j]	E	–[n]	–[p]	A	318	0·3	0·7	1·3	522	O	*Raphanus*[e]	FC:PI
407a	*Cochlearia tatrae* Borbás	Yes	Brassicaceae[j]	E	42	6	P	1,022	1·0	2·1	4·2	546	O	*Cirsium*[e]	FC:PI
408d	*Cocos nucifera* L. cv. Malayan Yellow Dwarf	No	Arecaceae[j]	M	32	2	P	2,738	2·8	5·6	11·2	547	O	*Petunia*[e]	FC:PI
409a	*Coffea anthonyi* Stoff. & F.Anthony	Yes	Rubiaceae	E	22	2	P	706	0·7	1·4	2·9	560[ar]	O	*Petunia*[e]	FC:PI
410j	*Coffea arabica* L.	No	Rubiaceae	E	44[o]	4	P	1,120	1·1	2·3	4·6	501[ag]	O	B[c]	Fe
411d	*Coffea brevipes* Hiern	Yes	Rubiaceae	E	22	2	P	745	0·8	1·5	3·0	560	O	*Petunia*[e]	FC:PI
412e	*Coffea canephora* Pierre ex A.Froehner	Yes	Rubiaceae	E	22	2	P	704	0·7	1·4	2·9	560	O	*Petunia*[e]	FC:PI
413d	*Coffea congensis* Froehn.	Yes	Rubiaceae	E	22	2	P	723	0·7	1·5	3·0	560	O	*Petunia*[e]	FC:PI
414a	*Coffea costatifructa* Bridson	Yes	Rubiaceae	E	22	2	P	562	0·6	1·2	2·3	560	O	*Petunia*[e]	FC:PI
415e	*Coffea eugenioides* S.Moore	Yes	Rubiaceae	E	22	2	P	667	0·7	1·4	2·7	560	O	*Petunia*[e]	FC:PI
416a	*Coffea heterocalyx* Stoff.	Yes	Rubiaceae	E	22	2	P	849	0·9	1·7	3·5	560	O	*Petunia*[e]	FC:PI
417d	*Coffea humilis* A.Chev.	Yes	Rubiaceae	E	22	2	P	863	0·9	1·8	3·5	560	O	*Petunia*[e]	FC:PI
418a	*Coffea kapakata* (A.Chev.) Bridson	Yes	Rubiaceae	E	22	2	P	647	0·7	1·3	2·6	560	O	*Petunia*[e]	FC:PI
419f	*Coffea liberica* Hiern	Yes	Rubiaceae	E	22	2	P	739	0·8	1·5	3·0	560	O	*Petunia*[e]	FC:PI
419g	*Coffea liberica* Hiern subsp. *dewevrei*	Yes	Rubiaceae	E	22	2	P	688	0·7	1·4	2·8	560	O	*Petunia*[e]	FC:PI
420a	*Coffea pocsii* Bridson	Yes	Rubiaceae	E	22	2	P	530	0·5	1·1	2·2	560	O	*Petunia*[e]	FC:PI
421e	*Coffea pseudozanguebariae* D.M.Bridson	Yes	Rubiaceae	E	22	2	P	553	0·6	1·1	2·3	560	O	*Petunia*[e]	FC:PI
422d	*Coffea racemosa*[l]	Yes	Rubiaceae	E	22	2	P	506	0·5	1·0	2·1	560	O	*Petunia*[e]	FC:PI
423b	*Coffea salvatrix* Swynn. & Philipson	Yes	Rubiaceae	E	22	2	P	597	0·6	1·2	2·4	560	O	*Petunia*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
424d	*Coffea sessiliflora* Bridson	Yes	Rubiaceae	E	22	2	P	542	0·6	1·1	2·2	560	O	*Petunia*[e]	FC:PI
425d	*Coffea stenophylla* G.Don	Yes	Rubiaceae	E	22	2	P	629	0·6	1·3	2·6	560	O	*Petunia*[e]	FC:PI
426a	*Colchicum alpinum* DC.[i]	No	Colchicaceae	M	56	6	P	3,941	4·0	8·1	16·1	468	O	*Petunia*[e]	FC:EB
427b	*Colchicum autumnale* L.[i]	No	Colchicaceae	M	36	4	P	2,880	2·9	5·9	11·8	468	O	G[c]	FC:EB
428a	*Colchicum corsicum* Baker[i]	No	Colchicaceae	M	c. 200	c. 22	P	10,416	10·7	21·3	42·6	468	O	G[c]	FC:EB
429a	*Colchicum lusitanum* Brot.[i]	No	Colchicaceae	M	c. 96	c. 10	P	5,232	5·4	10·7	21·4	468	O	G[c]	FC:EB
430a	*Colchicum multiflorum* Brot.[i]	No	Colchicaceae	M	c. 144	16	P	8,069	8·3	16·5	33·0	468	O	G[c]	FC:EB
431a	*Colpodium versicolor* (Stev.) Schmalh.	Yes	Poaceae[j]	M	4	2	P	1,174	1·2	2·4	4·8	574	O	G[d]	FC:PI
432a	*Colubrina asiatica* (L.) Brogn.	No	Rhamnaceae	E	–[n]	–[p]	P	907	0·9	1·9	3·7	501[ag]	O	B[c]	Fe
433a	*Colymbada apiculata* (Ledeb.) Holub	Yes	Asteraceae[j]	E	20	2	P	1,731	1·8	3·5	7·1	529	O	G[c]	CIA
434a	*Colymbada badensis* (Tratt.) Holub	Yes	Asteraceae[j]	E	20	2	P	1,692	1·7	3·5	6·9	529	O	G[c]	CIA
435a	*Colymbada chrysolepis* (Vis.) Holub	Yes	Asteraceae[j]	E	20	2	P	1,663	1·7	3·4	6·8	529	O	G[c]	CIA
436a	*Colymbada immanuelis-loewii* (Degen) Holub	Yes	Asteraceae[j]	E	20	2	P	1,614	1·7	3·3	6·6	529	O	G[c]	CIA
437a	*Colymbada kotschyana* (Heuffel ex Koch) Holub	Yes	Asteraceae[j]	E	20	2	P	1,702	1·7	3·5	7·0	529	O	G[c]	CIA
438a	*Colymbada mannagettae* Podp.	Yes	Asteraceae[j]	E	20	2	P	1,623	1·7	3·3	6·6	529	O	G[c]	CIA
439a	*Colymbada orientalis* (L.) Holub	Yes	Asteraceae[j]	E	20	2	P	1,614	1·7	3·3	6·6	529	O	G[c]	CIA
440a	*Colymbada orientalis* (L.) Holub	Yes	Asteraceae[j]	E	40	4	P	3,384	3·5	6·9	13·8	529	O	G[c]	CIA
441a	*Colymbada salonitana* (Vis.) Holub. var. *macracantha*	Yes	Asteraceae[j]	E	20	2	P	1,800	1·8	3·7	7·4	529	O	G[c]	CIA
441b	*Colymbada salonitana* (Vis.) Holub. var. *salonitana*	Yes	Asteraceae[j]	E	20	2	P	1,888	1·9	3·9	7·7	529	O	G[c]	CIA
442a	*Colymbada scabiosa* (L.) Holub	Yes	Asteraceae[j]	E	20	2	P	1,731	1·8	3·5	7·1	529	O	G[c]	CIA
443a	*Colymbada stereophylla* (Besser) Holub	Yes	Asteraceae[j]	E	20	2	P	1,643	1·7	3·4	6·7	529	O	G[c]	CIA
444a	*Conostylis candicans* Endl.	No	Haemodoraceae	M	16[o]	–[p]	P	1,276	1·3	2·6	5·2	612	O	*Solan.*[e]	FC:PI
445a	*Conringia planisiliqua* Fisch. & C.A.Mey.	Yes	Brassicaceae[j]	E	16	2[p]	–[q]	225	0·2	0·5	0·9	599	O	L	FC:PI
446a	*Consolea corallicola* Small (male)	Yes	Cactaceae	E	66	6	P	2,523	2·6	5·2	10·3	557	O	G[c]	FC:PI

447a	*Consolea falcata* (Ekman & Werderm.) F.M. Knuth	Yes	Cactaceae	E	88	8	P	3,756	3·8	7·7	15·4	557	O	G[c]	FC:PI
448a	*Consolea macracantha* A.Berger	Yes	Cactaceae	E	66	6	P	2,386	2·4	4·9	9·8	557	O	G[c]	FC:PI
449a	*Consolea millspaughii* (Britton) A.Berger (male)	Yes	Cactaceae	E	66	6	P	2,406	2·5	4·9	9·8	557	O	G[c]	FC:PI
450a	*Consolea millspaughii* (Linn.) A.Berger subsp. *caymanensis*	Yes	Cactaceae	E	–[n]	8	P	3,751	3·8	7·7	15·3	557	O	G[c]	FC:PI
451a	*Consolea moniliformis* A.Berger (male)	Yes	Cactaceae	E	66	6	P	2,479	2·5	5·1	10·1	557	O	G[c]	FC:PI
452a	*Consolea nashii* A.Berger	Yes	Cactaceae	E	66	6	P	2,489	2·5	5·1	10·2	557	O	G[c]	FC:PI
453a	*Consolea picardea* (Urb.) Areces (male)	Yes	Cactaceae	E	66	6	P	2,406	2·5	4·9	9·8	557	O	G[c]	FC:PI
454a	*Consolea rubescens* (Salm-Dyck ex A.P. de Candolle) Lem. (male)	Yes	Cactaceae	E	88	8	P	3,765	3·9	7·7	15·4	557	O	*Solan.*[e]	FC:PI
454b	*Consolea rubescens* (Salm-Dyck ex A.P. de Candolle) Lem. (female)	Yes	Cactaceae	E	88	8	P	3,878	4·0	7·9	15·9	557	O	*Solan.*[e]	FC:PI
455a	*Consolea spinosissima* Lem.	Yes	Cactaceae	E	66	6	P	2,465	2·5	5·0	10·1	557	O	G[c]	FC:PI
456a	*Convolvulus canariensis* L.	–[m]	Convolvulaceae	E	22, 24[o]	4	P	1,007	1·0	2·1	4·1	552	O	*Solan.*[e]	FC:PI
457a	*Convolvulus floridus* L.f.	–[m]	Convolvulaceae	E	30[o]	6	P	1,037	1·1	2·1	4·2	477	O	*Glycine*[e]	FC:PI
458a	*Convolvulus perraudieri* Coss.	–[m]	Convolvulaceae	E	30	6	P	1,042	1·1	2·1	4·3	477	O	*Glycine*[e]	FC:PI
459a	*Convolvulus scoparius* L.f.	–[m]	Convolvulaceae	E	30[o]	6	P	1,042	1·1	2·1	4·3	552	O	*Solan.*[e]	FC:PI
460a	*Coriandrum sativum* L.	No	Apiaceae[j]	E	–[n]	–[p]	A	2,484	2·5	5·1	10·2	563	O	G[c]	FC:PI
462a	*Cortaderia richardii* (Endl.) Zotov	Yes	Poaceae[j]	M	90	10	P	3,839	3·9	7·9	15·7	528	O	–[w]	FC:PI
462b	*Cortaderia richardii* (Endl.) Zotov	Yes	Poaceae[j]	M	90	10	P	2,298	2·4	4·7	9·4	476	O	*Actinidia*[e]	FC:PI
463a	*Cortaderia splendens* Connor[i]	Yes	Poaceae[j]	M	90	10	P	3,770	3·9	7·7	15·4	528	O	–[w]	FC:PI
463b	*Cortaderia splendens* Connor[i]	Yes	Poaceae[j]	M	90	10	P	4,152	4·2	8·5	17·0	528	O	–[w]	FC:PI
464a	*Cortaderia toetoe* Zotov	Yes	Poaceae[j]	M	90	10	P	3,883	4·0	7·9	15·9	528	O	–[w]	FC:PI
464a	*Cortaderia fulvida* (Buchanan) Zotov[i]	Yes	Poaceae[j]	M	90	10	P	4,088	4·2	8·4	16·7	528	O	–[w]	FC:PI
465a	*Cortaderia turbaria* Connor	Yes	Poaceae[j]	M	90	10	P	4,685	4·8	9·6	19·2	528	O	–[w]	FC:PI
466b	*Corylus avellana* L.[i]	Yes	Betulaceae	E	–[n]	–[p]	P	391	0·4	0·8	1·6	489	O	–[w]	FC:EB
466c	*Corylus avellana* L.[i]	Yes	Betulaceae	E	–[n]	–[p]	P	460	0·5	0·9	1·9	489	O	–[w]	FC:EB
467a	*Corynocarpus laevigatus* J.R.Forst. & G.Forst.	No	Corynocarpaceae	E	44[o]	–[p]	P	753	0·8	1·5	3·1	612	O	*Solan.*[e]	FC:PI
468a	*Crambe arborea* Webb ex Christ var. *indivisa*	–[m]	Brassicaceae[j]	E	30[o]	6	P	910	0·9	1·9	3·7	477	O	*Glycine*[e]	FC:PI
469a	*Crambe cordifolia* Stev.	No	Brassicaceae[j]	E	c. 120	8	P	4,630	4·7	9·5	18·9	602	O	*Solan.*[e]	FC:PI
470a	*Crambe laevigata* DC. ex Christ	–[m]	Brassicaceae[j]	E	~30	6	P	929	1·0	1·9	3·8	477	O	*Glycine*[e]	FC:PI
471a	*Crambe maritima* L.	No	Brassicaceae[j]	E	60	4	P	2,365	2·4	4·8	9·7	602	O	*Solan.*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
472a	*Crambe scaberrima* Webb ex Bramw.	–[m]	Brassicaceae[j]	E	~30	6	P	905	0·9	1·9	3·7	477	O	*Glycine*[e]	FC:PI
473a	*Crambe strigosa* L'Hér.	–[m]	Brassicaceae[j]	E	30[o]	6	P	968	1·0	2·0	4·0	477	O	*Glycine*[e]	FC:PI
474a	*Crataegus aemula* Beadle[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·6	5·1	527	O	G[c]	FC:PI
474b	*Crataegus aemula* Beadle[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,545	1·6	3·2	6·3	527	O	G[c]	FC:PI
475a	*Crataegus aestivalis* (Walter) Torr. & A.Gray	Yes	Rosaceae	E	–[n]	–[p]	P	616	0·6	1·3	2·5	527	O	G[c]	FC:PI
476a	*Crataegus agrestina* Beadle	Yes	Rosaceae	E	–[n]	4[z]	P	1,594	1·6	3·3	6·5	527	O	G[c]	FC:PI
477a	*Crataegus aprica* Beadle	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·0	4·0	527	O	G[c]	FC:PI
478a	*Crataegus arnoldiana* Sarg.	Yes	Rosaceae	E	–[n]	4[z]	P	1,403	1·4	2·9	5·7	527	O	G[c]	FC:PI
479a	*Crataegus ashei* Beadle[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,413	1·4	2·9	5·8	527	O	G[c]	FC:PI
479b	*Crataegus ashei* Beadle[i]	Yes	Rosaceae	E	–[n]	–[p]	P	1,707	1·7	3·5	7·0	527	O	G[c]	FC:PI
480a	*Crataegus brachyacantha* Sarg. & Engelm.[i]	Yes	Rosaceae	E	–[n]	2-3[z]	P	919	0·9	1·9	3·8	527	O	G[c]	FC:PI
481a	*Crataegus calpodendron* (Ehrh.) Medik.[i]	Yes	Rosaceae	E	–[n]	2[z]	P	773	0·8	1·6	3·2	527	O	G[c]	FC:PI
481b	*Crataegus calpodendron* (Ehrh.) Medik.[i]	Yes	Rosaceae	E	–[n]	2-3[z]	P	890	0·9	1·8	3·6	527	O	G[c]	FC:PI
482a	*Crataegus castlegarensis* J.B.Phipps[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,330	1·4	2·7	5·4	527	O	G[c]	FC:PI
482b	*Crataegus castlegarensis* J.B.Phipps[i]	Yes	Rosaceae	E	–[n]	>4[z]	P	1,785	1·8	3·7	7·3	527	O	G[c]	FC:PI
483a	*Crataegus chlorosarca* Maxim.	Yes	Rosaceae	E	–[n]	2[z]	P	797	0·8	1·6	3·3	527	O	G[c]	FC:PI
484a	*Crataegus chrysocarpa* Ashe var. *aboriginum* (Sarg.) Kruschke	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·5	5·1	527	O	G[c]	FC:PI
484b	*Crataegus chrysocarpa* Ashe var. *phoenicea* Palmer	Yes	Rosaceae	E	–[n]	3-4[z]	P	1,276	1·3	2·6	5·2	527	O	G[c]	FC:PI
484c	*Crataegus chrysocarpa* Ashe var. *piperi* (Britton) Kruschke[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,477	1·5	3·0	6·0	527	O	G[c]	FC:PI
484d	*Crataegus chrysocarpa* Ashe	Yes	Rosaceae	E	–[n]	4[z]	P	1,413	1·4	2·9	5·8	527	O	G[c]	FC:PI
485a	*Crataegus collina* Chapm.[i]	Yes	Rosaceae	E	–[n]	2-3[z]	P	978	1·0	2·0	4·0	527	O	G[c]	FC:PI
485b	*Crataegus collina* Chapm.[i]	Yes	Rosaceae	E	–[n]	3-4[z]	P	1,257	1·3	2·6	5·1	527	O	G[c]	FC:PI
486a	*Crataegus compacta* Sarg.	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·4	4·7	527	O	G[c]	FC:PI
487b	*Crataegus crus-galli* L. s.l.[i]	Yes	Rosaceae	E	–[n]	–[p]	P	587	0·6	1·2	2·4	527	O	G[c]	FC:PI
487c	*Crataegus crus-galli* L. s.l.[i]	Yes	Rosaceae	E	–[n]	–[p]	P	1,682	1·7	3·4	6·9	527	O	G[c]	FC:PI

488a	*Crataegus dahurica* Koehne	Yes	Rosaceae	E	–[n]	2[z]	P	807	0·8	1·7	3·3	527	O	G[c]	FC:PI
489a	*Crataegus dodgei* Ashe[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,555	1·6	3·2	6·4	527	O	G[c]	FC:PI
490a	*Crataegus douglasii* Lindl.[i]	Yes	Rosaceae	E	–[n]	3-4[z]	P	1,296	1·3	2·7	5·3	527	O	G[c]	FC:PI
490b	*Crataegus douglasii* Lindl.[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,609	1·6	3·3	6·6	527	O	G[c]	FC:PI
491a	*Crataegus enderbyensis* J.B.Phipps & O'Kennon[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,526	1·6	3·1	6·2	527	O	G[c]	FC:PI
492a	*Crataegus finitima* Sarg.	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·3	4·6	527	O	G[c]	FC:PI
493a	*Crataegus flavida* Sarg.	Yes	Rosaceae	E	–[n]	–[p]	P	1,726	1·8	3·5	7·1	527	O	G[c]	FC:PI
494a	*Crataegus greggiana* Eggl.	Yes	Rosaceae	E	–[n]	4[z]	P	1,340	1·4	2·7	5·5	527	O	G[c]	FC:PI
495a	*Crataegus harbisonii* Beadle[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,555	1·6	3·2	6·4	527	O	G[c]	FC:PI
496a	*Crataegus heldreichii* Boiss.	Yes	Rosaceae	E	–[n]	2[z]	P	778	0·8	1·6	3·2	527	O	G[c]	FC:PI
497a	*Crataegus hupehensis* Sarg.[i]	Yes	Rosaceae	E	–[n]	2-3[z]	P	880	0·9	1·8	3·6	527	O	G[c]	FC:PI
497b	*Crataegus hupehensis* Sarg.[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·3	4·6	527	O	G[c]	FC:PI
498a	*Crataegus irrasa* Sarg.[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,496	1·5	3·1	6·1	527	O	G[c]	FC:PI
499a	*Crataegus laevigata* (Poir.) DC.[i]	Yes	Rosaceae	E	–[n]	2[z]	P	685	0·7	1·4	2·8	527	O	G[c]	FC:PI
500a	*Crataegus laevigata* (Poir.) DC.[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,526	1·6	3·1	6·2	527	O	G[c]	FC:PI
501a	*Crataegus lepida* Beadle	Yes	Rosaceae	E	–[n]	3-4[z]	P	1,271	1·3	2·6	5·2	527	O	G[c]	FC:PI
502a	*Crataegus macracantha* Lodd. ex Loudon[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,457	1·5	3·0	6·0	527	O	G[c]	FC:PI
502b	*Crataegus macracantha* Lodd. ex Loudon[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,638	1·7	3·4	6·7	527	O	G[c]	FC:PI
503a	*Crataegus macrosperma* Ashe	Yes	Rosaceae	E	–[n]	4[z]	P	1,521	1·6	3·1	6·2	527	O	G[c]	FC:PI
504a	*Crataegus marshallii* Eggl.[i]	Yes	Rosaceae	E	–[n]	2-3[z]	P	856	0·9	1·8	3·5	527	O	G[c]	FC:PI
505a	*Crataegus mollis* Scheele[i]	Yes	Rosaceae	E	–[n]	2[z]	P	714	0·7	1·5	2·9	527	O	G[c]	FC:PI
505b	*Crataegus mollis* Scheele[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·4	4·8	527	O	G[c]	FC:PI
506a	*Crataegus monogyna* Jacq.[i]	Yes	Rosaceae	E	–[n]	2[z]	P	660	0·7	1·4	2·7	527	O	G[c]	FC:PI
506b	*Crataegus monogyna* Jacq.[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·3	4·5	527	O	G[c]	FC:PI
507a	*Crataegus munda* Beadle[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·5	5·0	527	O	G[c]	FC:PI
508a	*Crataegus nigra* Waldst. & Kit.	Yes	Rosaceae	E	–[n]	2[z]	P	822	0·8	1·7	3·4	527	O	G[c]	FC:PI
509a	*Crataegus nitida* (Engelm.) Sarg.	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·0	4·1	527	O	G[c]	FC:PI
510a	*Crataegus okennonii* J.B.Phipps	Yes	Rosaceae	E	–[n]	4[z]	P	1,633	1·7	3·3	6·7	527	O	G[c]	FC:PI
511a	*Crataegus opaca* Hook. & Arn. ex Hook.[i]	Yes	Rosaceae	E	–[n]	–[p]	P	611	0·6	1·3	2·5	527	O	G[c]	FC:PI
511b	*Crataegus opaca* Hook. & Arn. ex Hook.[i]	Yes	Rosaceae	E	–[n]	2[z]	P	778	0·8	1·6	3·2	527	O	G[c]	FC:PI
512a	*Crataegus phaenopyrum* (L.f.) Medik.[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·4	4·7	527	O	G[c]	FC:PI
512b	*Crataegus phaenopyrum* (L.f.) Medik.[i]	Yes	Rosaceae	E	–[n]	–[p]	P	1,800	1·8	3·7	7·4	527	O	G[c]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
513a	*Crataegus phippsii* O'Kennon[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,550	1·6	3·2	6·3	527	O	G[c]	FC:PI
514a	*Crataegus pinnatifida* Bunge[i]	Yes	Rosaceae	E	–[n]	2[z]	P	763	0·8	1·6	3·1	527	O	G[c]	FC:PI
515a	*Crataegus pinnatifida* Bunge[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,565	1·6	3·2	6·4	527	O	G[c]	FC:PI
516a	*Crataegus placiva* Sarg.	Yes	Rosaceae	E	–[n]	4[z]	P	1,447	1·5	3·0	5·9	527	O	G[c]	FC:PI
517a	*Crataegus pruinosa* (H.L.Wendl.) K.Koch[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·4	4·8	527	O	G[c]	FC:PI
517b	*Crataegus pruinosa* (H.L.Wendl.) K.Koch[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,633	1·7	3·3	6·7	527	O	G[c]	FC:PI
518a	*Crataegus punctata* Jacq.[i]	Yes	Rosaceae	E	–[n]	2[z]	P	655	0·7	1·3	2·7	527	O	G[c]	FC:PI
518b	*Crataegus punctata* Jacq.[i]	Yes	Rosaceae	E	–[n]	2[z]	P	748	0·8	1·5	3·1	527	O	G[c]	FC:PI
519a	*Crataegus rivularis* Nutt.[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,325	1·4	2·7	5·4	527	O	G[c]	FC:PI
519b	*Crataegus rivularis* Nutt.[i]	Yes	Rosaceae	E	–[n]	> 4[z]	P	1,677	1·7	3·4	6·9	527	O	G[c]	FC:PI
520a	*Crataegus rufula* Sarg.[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·0	4·1	527	O	G[c]	FC:PI
521a	*Crataegus saligna* Greene[i]	Yes	Rosaceae	E	–[n]	2[z]	P	817	0·8	1·7	3·3	527	O	G[c]	FC:PI
522a	*Crataegus sargentii* Beadle	Yes	Rosaceae	E	–[n]	2-3[z]	P	968	1·0	2·0	4·0	527	O	G[c]	FC:PI
523a	*Crataegus shuswapensis* J.B.Phipps & O'Kennon	Yes	Rosaceae	E	–[n]	2[z]	P	709	0·7	1·5	2·9	527	O	G[c]	FC:PI
524a	*Crataegus songarica* K.Koch	Yes	Rosaceae	E	–[n]	4[z]	P	1,443	1·5	3·0	5·9	527	O	G[c]	FC:PI
525a	*Crataegus spathulata* Michx.[i]	Yes	Rosaceae	E	–[n]	2[z]	P	665	0·7	1·4	2·7	527	O	G[c]	FC:PI
525b	*Crataegus spathulata* Michx.[i]	Yes	Rosaceae	E	–[n]	2-3[z]	P	910	0·9	1·9	3·7	527	O	G[c]	FC:PI
526a	*Crataegus submollis* Sarg.[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,628	1·7	3·3	6·7	527	O	G[c]	FC:PI
527a	*Crataegus succulenta* Ashe[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·4	4·8	527	O	G[c]	FC:PI
528a	*Crataegus suksdorfii* (Sarg.) Kruschke[i]	Yes	Rosaceae	E	–[n]	2[z]	P	694	0·7	1·4	2·8	527	O	G[c]	FC:PI
529a	*Crataegus suksdorfii* (Sarg.) Kruschke[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,443	1·5	3·0	5·9	527	O	G[c]	FC:PI
530a	*Crataegus triflora* Chapm.[i]	Yes	Rosaceae	E	–[n]	2[z]	P	660	0·7	1·4	2·7	527	O	G[c]	FC:PI
531a	*Crataegus triflora* Chapm.[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,311	1·3	2·7	5·4	527	O	G[c]	FC:PI
532a	*Crataegus uniflora* Muench.[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,340	1·4	2·7	5·5	527	O	G[c]	FC:PI
533a	*Crataegus viburnifolia* Sarg.[i]	Yes	Rosaceae	E	–[n]	2-3[z]	P	949	1·0	1·9	3·9	527	O	G[c]	FC:PI
533b	*Crataegus viburnifolia* Sarg.[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·5	5·0	527	O	G[c]	FC:PI
534a	*Crataegus viridis* L.[i]	Yes	Rosaceae	E	–[n]	2[z]	P	826	0·8	1·7	3·4	527	O	G[c]	FC:PI
534b	*Crataegus viridis* L.[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·5	5·0	527	O	G[c]	FC:PI

535a	*Crataegus wattiana* Hemsl. & Lace[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·4	4·7	527	O	G[c]	FC:PI
535b	*Crataegus wattiana* Hemsl. & Lace[i]	Yes	Rosaceae	E	–[n]	4[z]	P	1,594	1·6	3·3	6·5	527	O	G[c]	FC:PI
536a	*Crataegus wilsonii* Sarg.[i]	Yes	Rosaceae	E	–[n]	2[z]	P	787	0·8	1·6	3·2	527	O	G[c]	FC:PI
537i	*Crepis capillaris* (L.) Wallr.	No	Asteraceae[j]	E	–[n]	–[p]	A	2,196	2·2	4·5	9·0	518	O	*Raphanus*[e]	FC:PI
538a	*Crinodendron patagua* Molina	No	Elaeocarpaceae	E	16	–[p]	P	293	0·3	0·6	1·2	612	O	J	Fe
539a	*Crithmum maritimum* L.	Yes	Apiaceae[j]	E	20[o]	2	P	2,142	2·2	4·4	8·8	580	O	G[c]	CIA
540a	*Crucihimalaya himalaica* (Edgeworth) Al-Shehbaz, O'Kane & R.A.Price	–[m]	Brassicaceae[j]	E	16	–[p]	–[q]	316	0·3	0·6	1·3	509	O	–[w]	FC:PI
541a	*Crucihimalaya mollissima* (C.A.Mey.) Al-Shehbaz, O'Kane & R.A. Price	Yes	Brassicaceae[j]	E	32	4	–[q]	528	0·5	1·1	2·2	599	O	L	FC:PI
542a	*Crucihimalaya wallichii* (Hook.f. & Thomson) Al-Shehbaz, O'Kane & R.A.Price	Yes	Brassicaceae[j]	E	16	2	–[q]	293	0·3	0·6	1·2	599	O	L	FC:PI
542b	*Crucihimalaya wallichii* (J.D.Hooker & Thompson) Al-Shehbaz, O'Kane & R.A.Price	–[m]	Brassicaceae[j]	E	16	–[p]	–[q]	323	0·3	0·7	1·3	509	O	–[w]	FC:PI
543a	*Cryptanthus acaulis* (Lindl.) Beer	Yes	Bromeliaceae	M	34	2	P	675	0·7	1·4	2·8	571	O	*Glycine*[e]	FC:PI
544a	*Cryptanthus bahianus* L.B.Sm.	Yes	Bromeliaceae	M	34[o]	2	P	367	0·4	0·8	1·5	571	O	*Glycine*[e]	FC:PI
545a	*Cryptanthus beuckeri* E.Morren	Yes	Bromeliaceae	M	–[n]	2	P	713	0·7	1·5	2·9	571	O	*Glycine*[e]	FC:PI
546a	*Cryptanthus schwackeanus* Mez	Yes	Bromeliaceae	M	34	2	P	347	0·4	0·7	1·4	571	O	*Glycine*[e]	FC:PI
547a	*Cryptotaenia elegans* Webb ex Bolle	–[m]	Apiaceae[j]	E	16	2	B	460	0·5	0·9	1·9	552	O	*Solan.*[e]	FC:PI
548g	*Cucumis sativus* L.	Yes	Cucurbitaceae	E	–[n]	–[p]	A	504	0·5	1·0	2·1	492	O	*Raphanus*[e]	FC:PI
549a	*Cucurbita argyrosperma* Huber var. *argyrosperma*	No	Cucurbitaceae	E	40[o]	2	A	366	0·4	0·7	1·5	500	O	*Trifolium*[e]	FC:PI
549b	*Cucurbita argyrosperma* Huber var. *callicarpa*	No	Cucurbitaceae	E	40[o]	2	A	372	0·4	0·8	1·5	500	O	*Trifolium*[e]	FC:PI
549c	*Cucurbita argyrosperma* Huber var. *palmeri*	No	Cucurbitaceae	E	40[o]	2	A	374	0·4	0·8	1·5	500	O	*Trifolium*[e]	FC:PI
549d	*Cucurbita argyrosperma* Huber var. *stenosperma*	No	Cucurbitaceae	E	40[o]	2	A	379	0·4	0·8	1·6	500	O	*Trifolium*[e]	FC:PI
550a	*Cucurbita cylindrata* L.H.Bailey	No	Cucurbitaceae	E	40[o]	2	A	410	0·4	0·8	1·7	500	O	*Trifolium*[e]	FC:PI
551a	*Cucurbita ecuadorensis* H.C.Cutler & Whitaker	No	Cucurbitaceae	E	40[o]	2	A	354	0·4	0·7	1·4	500	O	*Trifolium*[e]	FC:PI
552a	*Cucurbita ficifolia* Bouché	No	Cucurbitaceae	E	40[o]	2	A	456	0·5	0·9	1·9	500	O	*Trifolium*[e]	FC:PI
553a	*Cucurbita foetidissima* Kunth	No	Cucurbitaceae	E	40[o]	2	P	335	0·3	0·7	1·4	500	O	*Trifolium*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
554a	*Cucurbita lundelliana* L.H.Bailey	No	Cucurbitaceae	E	40[o]	2	A	350	0·4	0·7	1·4	500	O	*Trifolium*[e]	FC:PI
555a	*Cucurbita maxima* Duch. ex Lam. cv. Prizewinner	No	Cucurbitaceae	E	40	–[p]	A	450	0·5	0·9	1·8	564	O	H[c]	FC:PI
555b	*Cucurbita maxima*[l]	No	Cucurbitaceae	E	40[o]	2	A	434	0·4	0·9	1·8	500	O	*Trifolium*[e]	FC:PI
556b	*Cucurbita moschata* (Duch. ex Lam.) Duch. ex Poir.	Yes	Cucurbitaceae	E	–[n]	–[p]	A	474	0·5	1·0	1·9	492	O	*Raphanus*[e]	FC:PI
556c	*Cucurbita moschata*[l]	No	Cucurbitaceae	E	40[o]	2	A	346	0·4	0·7	1·4	500	O	*Trifolium*[e]	FC:PI
557a	*Cucurbita okeechobeensis* L.H.Bailey subsp. *martinezii*	No	Cucurbitaceae	E	40[o]	2	A	360	0·4	0·7	1·5	500	O	*Trifolium*[e]	FC:PI
558a	*Cucurbita pedatifolia* L.H.Bailey	No	Cucurbitaceae	E	40[o]	2	A	378	0·4	0·8	1·5	500	O	*Trifolium*[e]	FC:PI
559e	*Cucurbita pepo* L.	Yes	Cucurbitaceae	E	–[n]	–[p]	A	577	0·6	1·2	2·4	492	O	*Glycine*[e]	FC:PI
559f	*Cucurbita pepo* var. *fraterna*[l]	No	Cucurbitaceae	E	40[o]	2	A	423	0·4	0·9	1·7	500	O	*Trifolium*[e]	FC:PI
559g	*Cucurbita pepo* var. *ovifera*[l]	No	Cucurbitaceae	E	40[o]	2	A	422	0·4	0·9	1·7	500	O	*Trifolium*[e]	FC:PI
559h	*Cucurbita pepo* L. cv. Jack-B-Little	No	Cucurbitaceae	E	40	–[p]	A	474	0·5	1·0	1·9	564	O	H[c]	FC:PI
560a	*Curcuma aeruginosa* Roxb.	Yes	Zingiberaceae	M	63	9	P	–[t]	–[t]	2·9	5·7	562	O	*Solan.*[e]	FC:PI
561a	*Curcuma amada* Roxb.	Yes	Zingiberaceae	M	42	6	P	910	0·9	1·9	3·7	562	O	*Solan.*[e]	FC:PI
562a	*Curcuma angustifolia* Roxb.	Yes	Zingiberaceae	M	42	6	P	1,051	1·1	2·2	4·3	562	O	*Glycine*[e]	FC:PI
563a	*Curcuma aromatica* Salisb. s.l.	Yes	Zingiberaceae	M	42	6	P	910	0·9	1·9	3·7	562	O	*Solan.*[e]	FC:PI
564a	*Curcuma aromatica* Salisb. s.l.[h]	Yes	Zingiberaceae	M	63	9	P	–[t]	–[t]	2·8	5·7	562	O	*Solan.*[e]	FC:PI
565a	*Curcuma aurantiaca* Zijp	Yes	Zingiberaceae	M	42	6	P	1,076	1·1	2·2	4·4	562	O	*Glycine*[e]	FC:PI
566a	*Curcuma caesia* Roxb.	Yes	Zingiberaceae	M	c. 63	9	P	–[t]	–[t]	2·8	5·6	562	O	*Glycine*[e]	FC:PI
567a	*Curcuma cannanorensis* R. Ansari, V. J. Nair & N. C. Nair	Yes	Zingiberaceae	M	42	6	P	1,139	1·2	2·3	4·7	562	O	*Glycine*[e]	FC:PI
568a	*Curcuma codonantha* Škorničk., M. Sabu & Prasanthk.	Yes	Zingiberaceae	M	63	9	P	–[t]	–[t]	2·8	5·7	562	O	*Glycine*[e]	FC:PI
569a	*Curcuma coriacea* Mangaly & M. Sabu	Yes	Zingiberaceae	M	42	6	P	1,271	1·3	2·6	5·2	562	O	*Bellis*[e]	FC:PI
570a	*Curcuma decipiens* Dalzell	Yes	Zingiberaceae	M	42	6	P	1,149	1·2	2·4	4·7	562	O	*Glycine*[e]	FC:PI
571a	*Curcuma elata* Roxb.	Yes	Zingiberaceae	M	63[o]	9	P	–[t]	–[t]	2·9	5·7	562	O	*Solan.*[e]	FC:PI
572a	*Curcuma ferruginea* Roxb.	Yes	Zingiberaceae	M	63[o]	9	P	–[t]	–[t]	2·8	5·6	562	O	*Glycine*[e]	FC:PI
573a	*Curcuma inodora* Blatt.	Yes	Zingiberaceae	M	42	6	P	1,120	1·1	2·3	4·6	562	O	*Glycine*[e]	FC:PI

574a	*Curcuma karnatakensis* Amalraj, Velay. & Mural	Yes	Zingiberaceae	M	42	6	P	1,144	1·2	2·3	4·7	562	O	*Bellis*[e]	FC:PI
575a	*Curcuma kudagensis* Velay., V.S. Pillai & Amalraj	Yes	Zingiberaceae	M	42	6	P	1,120	1·1	2·3	4·6	562	O	*Glycine*[e]	FC:PI
576a	*Curcuma latifolia* Roscoe	Yes	Zingiberaceae	M	63[o]	9	P	–[t]	–[t]	2·8	5·6	562	O	*Solan.*[e]	FC:PI
577a	*Curcuma leucorhiza* Roxb.	Yes	Zingiberaceae	M	63	9	P	–[t]	–[t]	2·7	5·4	562	O	*Solan.*[e]	FC:PI
578a	*Curcuma longa* L.	Yes	Zingiberaceae	M	63	9	P	–[t]	–[t]	2·7	5·4	562	O	*Solan.*[e]	FC:PI
579a	*Curcuma mangga* Valeton & Zijp	Yes	Zingiberaceae	M	42	6	P	895	0·9	1·8	3·7	562	O	*Solan.*[e]	FC:PI
580a	*Curcuma montana* Roxb.	Yes	Zingiberaceae	M	42	6	P	875	0·9	1·8	3·6	562	O	*Solan.*[e]	FC:PI
581a	*Curcuma mutabilis* Škorničk., M.Sabu & Prasanthk.	Yes	Zingiberaceae	M	42	6	P	1,218	1·2	2·5	5·0	562	O	*Bellis*[e]	FC:PI
582a	*Curcuma neilgherrensis* Wt.	Yes	Zingiberaceae	M	42	6	P	1,120	1·1	2·3	4·6	562	O	*Glycine*[e]	FC:PI
583a	*Curcuma oligantha* Trimen	Yes	Zingiberaceae	M	77	11	P	–[t]	–[t]	4·8	9·5	562	O	*Bellis*[e]	FC:PI
584a	*Curcuma prakasha* S.Tripathi	Yes	Zingiberaceae	M	42	6	P	914	0·9	1·9	3·7	562	O	*Solan.*[e]	FC:PI
585a	*Curcuma pseudomontana* J.Graham	Yes	Zingiberaceae	M	42	6	P	1,100	1·1	2·3	4·5	562	O	*Glycine*[e]	FC:PI
586a	*Curcuma raktakanta* Mangaly & M. Sabu	Yes	Zingiberaceae	M	105	15	P	–[t]	–[t]	4·6	9·1	562	O	*Solan.*[e]	FC:PI
587a	*Curcuma reclinata* Roxb.	Yes	Zingiberaceae	M	42	6	P	1,120	1·1	2·3	4·6	562	O	*Glycine*[e]	FC:PI
588a	*Curcuma roscoeana* Wall.	Yes	Zingiberaceae	M	42	6	P	958	1·0	2·0	3·9	562	O	*Glycine*[e]	FC:PI
589a	*Curcuma rubescens* Roxb.	Yes	Zingiberaceae	M	c. 42	6	P	914	0·9	1·9	3·7	562	O	*Solan.*[e]	FC:PI
590a	*Curcuma rubrobracteata* Škorničk., M.Sabu & Prasanthk.	Yes	Zingiberaceae	M	42	6	P	900	0·9	1·8	3·7	562	O	*Solan.*[e]	FC:PI
591a	*Curcuma vamana* M.Sabu & Mangaly	Yes	Zingiberaceae	M	22	2	P	812	0·8	1·7	3·3	562	O	*Solan.*[e]	FC:PI
593a	*Cuscuta campestris* Yuncker	No	Convolvulaceae	E	56[o]	–[p]	–[q]	5,296	5·4	10·8	21·7	568	O	–[w]	FC:PI
594a	*Cuscuta cephalanthi* Engelm.	No	Convolvulaceae	E	60[o]	–[p]	–[q]	3,839	3·9	7·9	15·7	568	O	–[w]	FC:PI
595a	*Cuscuta chilensis*[l]	No	Convolvulaceae	E	–[n]	–[p]	–[q]	2,802	2·9	5·7	11·5	568	O	–[w]	FC:PI
595b	*Curcuma zanthorrhiza* Roxb.	Yes	Zingiberaceae	M	63	9	P	–[t]	–[t]	2·9	5·8	562	O	*Solan.*[e]	FC:PI
596a	*Cuscuta compacta* Juss.	No	Convolvulaceae	E	30[o]	–[p]	–[q]	7,672	7·8	15·7	31·4	568	O	–[w]	FC:PI
597a	*Cuscuta epilinum* Weihe	No	Convolvulaceae	E	42[o]	–[p]	–[q]	3,785	3·9	7·7	15·5	568	O	–[w]	FC:PI
598a	*Cuscuta europaea* L.	No	Convolvulaceae	E	14[o]	–[p]	–[q]	1,051	1·1	2·2	4·3	568	O	–[w]	FC:PI
599a	*Cuscuta exaltata* Engelm.	No	Convolvulaceae	E	–[n]	–[p]	–[q]	20,470	20·9	41·9	83·7	568	O	–[w]	FC:PI
600a	*Cuscuta gronovii* Willdenow[h]	No	Convolvulaceae	E	60?[o]	–[p]	–[q]	2,137	2·2	4·4	8·7	568	O	–[w]	FC:PI
600b	*Cuscuta gronovii* Willdenow[h]	No	Convolvulaceae	E	60?[o]	–[p]	–[q]	6,753	6·9	13·8	27·6	568	O	–[w]	FC:PI
600c	*Cuscuta gronovii* Willdenow var. *calyptrata*	No	Convolvulaceae	E	60?[o]	–[p]	–[q]	5,609	5·7	11·5	22·9	568	O	–[w]	FC:PI
601a	*Cuscuta indecora* Choisy	No	Convolvulaceae	E	30[o]	–[p]	–[q]	32,049	32·8	65·5	131·1	568	O	–[w]	FC:PI
602a	*Cuscuta lupuliformis* Weihe	No	Convolvulaceae	E	28[o]	–[p]	–[q]	21,971	22·5	44·9	89·9	568	O	–[w]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
603a	*Cuscuta obtusiflora* Kunth	No	Convolvulaceae	E	–[n]	–[p]	–[q]	773	0·8	1·6	3·2	568	O	–[w]	FC:PI
604a	*Cuscuta pentagona* Engel.	No	Convolvulaceae	E	44[o]r 56[o]	–[p]	–[q]	567	0·6	1·2	2·3	568	O	–[w]	FC:PI
605a	*Cuscuta polygonorum* Engel.	No	Convolvulaceae	E	–[n]	–[p]	–[q]	792	0·8	1·6	3·2	568	O	–[w]	FC:PI
606a	*Cuscuta rostrata* Shuttlw. ex Engelm. & A.Gray	No	Convolvulaceae	E	–[n]	–[p]	–[q]	3,971	4·1	8·1	16·2	568	O	–[w]	FC:PI
607a	*Cuscuta veatchii* Brandegee	No	Convolvulaceae	E	–[n]	–[p]	–[q]	2,851	2·9	5·8	11·7	568	O	–[w]	FC:PI
608a	*Cyanus achtarovii* (Urumov) Holub	Yes	Asteraceae[j]	E	22	2	P	1,526	1·6	3·1	6·2	529	O	G[c]	CIA
609a	*Cyanus napuliferus* (Rochel) Sojak	Yes	Asteraceae[j]	E	20	2	P	1,213	1·2	2·5	5·0	529	O	G[c]	CIA
610a	*Cyanus pichleri* (Boiss.) Holub	Yes	Asteraceae[j]	E	44	4	P	1,927	2·0	3·9	7·9	529	O	G[c]	CIA
611a	*Cyanus segetum* Hill	Yes	Asteraceae[j]	E	24	2	A	719	0·7	1·5	2·9	529	O	G[c]	CIA
612a	*Cyanus thirkei* (Schultz Bip.) Holub	Yes	Asteraceae[j]	E	20 + 1B	2	P	1,066	1·1	2·2	4·4	529	O	G[c]	CIA
613a	*Cyanus triumfettii* (Bartl.) Dostal subsp. *adscendens*	Yes	Asteraceae[j]	E	22	2	P	1,369	1·4	2·8	5·6	529	O	G[c]	CIA
613b	*Cyanus triumfettii* (All.) Dostal ex Love & Love subsp. *triumfettii*	Yes	Asteraceae[j]	E	22	2	P	1,477	1·5	3·0	6·0	529	O	G[c]	CIA
614a	*Cyanus tuberosus* (Vis.) Sojak	Yes	Asteraceae[j]	E	20	2	P	1,232	1·3	2·5	5·0	529	O	G[c]	CIA
615a	*Cyclamen persicum* Mill var. Purple Flamed	–[m]	Primulaceae	E	48	2	P	1,550	1·6	3·2	6·3	498	O	*Solan.*	FC:PI
616b	*Cydonia oblonga* Mill.	Yes	Rosaceae	E	–[n]	2[z]	P	753	0·8	1·5	3·1	527	O	G[c]	FC:PI
616c	*Cydonia oblonga* Mill.	No	Rosaceae	E	–[n]	–[p]	P	968	1·0	2·0	4·0	492	O	*Glycine*[e]	FC:PI
617a	*Cymodocea nodosa* (Ucria) Asch.	Yes	Cymodoceaceae	M	28	4	P	528	0·5	1·1	2·2	479	O	G[c]	CIA
617b	*Cymodocea nodosa* (Ucria) Asch.	Yes	Cymodoceaceae	M	28	4	P	313	0·3	0·6	1·3	479	O	*Trifolium*[e]	FC:PI
618a	*Cynosurus cristatus* L.	–	Poaceae[j]	M	14[o]	2	P	2,980	3·0	6·1	12·2	555	O	G[c]	FC:PI
619a	*Cyrtochiloides cardiochila* (Lindl.) N.H.Williams & M.W.Chase	Yes	Orchidaceae	M	–[n]	–[p]	P	3,032	3·1	6·2	12·4	504[ah]	O	F	Fe
620a	*Cyrtochilum serratum* (Lindl.) Kränzl.	Yes	Orchidaceae	M	–[n]	–[p]	P	2,641	2·7	5·4	10·8	504[ah]	O	–[w]	FC:DAPI
621a	*Cytisus commutatus* (Willk.) Briq.	Yes	Fabaceae[j]	E	–[n]	–[p]	P	1,897	1·9	3·9	7·8	489	O	–[w]	FC:EB
622c	*Cytisus scoparius* subsp. *scoparius* (L.) Link	Yes	Fabaceae[j]	E	–[n]	–[p]	P	963	1·0	2·0	3·9	489	O	–[w]	FC:EB
623a	*Cytisus striatus* (Hill) Rothm.	Yes	Fabaceae[j]	E	–[n]	–[p]	P	944	1·0	1·9	3·9	489	O	–[w]	FC:EB
624h	*Dactylis glomerata* L. subsp. *glomerata*	Yes	Poaceae[j]	M	28	4	P	4,196	4·3	8·6	17·2	497[af]	O	F[c]	CIA

624i	*Dactylis glomerata* L.	–	Poaceae[j]	M	28[o]	4	P	4,422	4·5	9·0	18·1	555	O	G[c]	FC:PI
625a	*Dactylis polygama* Horv.	–	Poaceae[j]	M	14[o]	2	P	2,213	2·3	4·5	9·1	555	O	G[c]	FC:PI
626a	*Dactylis smithii* Linksubsp. *smithii*	–[m]	Poaceae[j]	M	14[o]	2	P	2,127	2·2	4·4	8·7	477	O	H[c]	FC:PI
627a	*Dactylorhiza fuchsii* (Druce) Soó	No	Orchidaceae	M	40	2	P	2,826	2·9	5·8	11·6	517	O	G[c]	CIA
628a	*Dactylorhiza incarnata* (L.) Soó subsp. *cruenta*	No	Orchidaceae	M	40	2	P	3,467	3·5	7·1	14·2	517	O	G[c]	CIA
629a	*Dactylorhiza lapponica* (Læst. ex Hartman) Soó	No	Orchidaceae	M	80	4	P	6,538	6·7	13·4	26·7	517	O	G[c]	CIA
630a	*Dactylorhiza maculata* (L.) Soó	No	Orchidaceae	M	80	4	P	5,535	5·7	11·3	22·6	517	O	G[c]	CIA
631a	*Dahlia apiculata* (Sherff) P.D.Sørensen	Yes	Asteraceae[j]	E	32	4[at]	P	2,020	2·1	4·1	8·3	597	O	G[c]	CIA
632a	*Dahlia australis* P.D.Sørensen	Yes	Asteraceae[j]	E	32	4[at]	P	1,946	2·0	4·0	8·0	597	O	G[c]	CIA
633a	*Dahlia coccinea* Cav.[i]	Yes	Asteraceae[j]	E	32	4[at]	P	2,117	2·2	4·3	8·7	597	O	G[c]	CIA
633b	*Dahlia coccinea* Cav.[i]	Yes	Asteraceae[j]	E	32	4[at]	P	2,416	2·5	4·9	9·9	597	O	G[c]	CIA
634a	*Dahlia coccinea* Cav.[i]	Yes	Asteraceae[j]	E	64	8[at]	P	3,946	4·0	8·1	16·1	597	O	G[c]	CIA
634b	*Dahlia coccinea* Cav.[i]	Yes	Asteraceae[j]	E	64	8[at]	P	4,401	4·5	9·0	18·0	597	O	G[c]	CIA
635a	*Dahlia dissecta* S.Watson[i]	Yes	Asteraceae[j]	E	34	4[at]	P	1,619	1·7	3·3	6·6	597	O	G[c]	CIA
636a	*Dahlia imperialis* Rozel[i]	Yes	Asteraceae[j]	E	32	4[at]	P	2,347	2·4	4·8	9·6	597	O	G[c]	CIA
637a	*Dahlia merckii* Lehman	Yes	Asteraceae[j]	E	36	4[at]	P	1,966	2·0	4·0	8·0	597	O	G[c]	CIA
638a	*Dahlia rudis* P.D.Sørensen	Yes	Asteraceae[j]	E	32	4[at]	P	1,712	1·8	3·5	7·0	597	O	G[c]	CIA
639a	*Dahlia scapigeroides* Sherff[i]	Yes	Asteraceae[j]	E	34	4[at]	P	2,054	2·1	4·2	8·4	597	O	G[c]	CIA
640a	*Dahlia sorensenii* Hanson & Hjerting[i]	Yes	Asteraceae[j]	E	64	8[at]	P	4,303	4·4	8·8	17·6	597	O	G[c]	CIA
641a	*Dahlia tenuicaulis* P.D.Sørensen	Yes	Asteraceae[j]	E	32	4[at]	P	2,064	2·1	4·2	8·4	597	O	G[c]	CIA
642a	*Dahlia variabilis* cv. Roquencourt[l]	Yes	Asteraceae[j]	E	64	8[at]	P	2,020	2·1	4·1	8·3	597	O	E[c]	FC:PI
642b	*Dahlia variabilis* cv. Helena[l]	Yes	Asteraceae[j]	E	64	8[at]	P	2,029	2·1	4·2	8·3	597	O	E[c]	FC:PI
643c	*Dalbergia sissoo* Roxb. ex DC.	No	Fabaceae[j]	E	20[o]	2	P	689	0·7	1·4	2·8	501[ag]	O	B[c]	Fe
644a	*Daphniphyllum pentandrum* Hayata var. *oldhamii*	Yes	Daphniphyllaceae	E	–[n]	–[p]	P	1,225	1·3	2·5	5·0	612	O	*Solan.*[e]	FC:PI
645a	*Dasylirion cedrosanum* Trel.	Yes	Asparagaceae	M	–[n]	–[p]	P	5,681	5·8	11·6	23·2	592	O	G	FC:PI
646f	*Dasypyrum villosum* (= *Haynaldia villosa*) (L.) Coss.& Durie ex P. Candargy	No[m1]	Poaceae[j]	M	14	2	P	5,399	5·5	11·0	22·1	605	O	F-2118p	FC:PI
647a	*Datisca cannabina* L.	Yes	Datiscaceae	E	22[o]	–[p]	P	1,122	1·1	2·3	4·6	612	O	*Solan.*[e]	FC:PI
648a	*Degenia velebitica* (Degen) Hayek	Yes	Brassicaceae[j]	E	16	2	–[q]	1,242	1·3	2·5	5·1	599	O	L	FC:PI
649a	*Dendranthema arcticum* Tzvelev subsp. *maekawanum* (Kitam.) H.Koyama	Yes	Asteraceae[j]	E	72	8	P	9,795	10·0	20·0	40·1	521	O	*Petunia*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[$])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
650a	*Dendranthema indica* Des Moul. var. *coreanum* Levl. & Van.	Yes	Asteraceae[j]	E	36	4	P	5,936	6·1	12·1	24·3	521	O	G[c]	FC:PI
651a	*Dendranthema maximowiczii* (Komarov) Tzvelev	Yes	Asteraceae[j]	E	54	6	P	7,716	7·9	15·8	31·6	521	O	G[c]	FC:PI
652a	*Dendranthema zawadskii* (Herbich) Tzvelev	Yes	Asteraceae[j]	E	72	8	P	10,377	10·6	21·2	42·4	521	O	G[c]	FC:PI
653a	*Deschampsia caespitosa* (L.) P.Beauv.	Yes	Poaceae[j]	M	26[o]	2	P	5,100	5·2	10·4	20·9	528	O	–[w]	FC:PI
654a	*Deschampsia chapmanii* Petrie	Yes	Poaceae[j]	M	26	2	P	5,403	5·5	11·1	22·1	528	O	–[w]	FC:PI
655a	*Deschampsia tenella* Petrie	Yes	Poaceae[j]	M	26	2	P	4,924	5·0	10·1	20·1	528	O	–[w]	FC:PI
656a	*Descurainia bourgeauana* (Fourn.) O.E.Schulz	Yes	Brassicaceae[j]	E	14	2	P	196	0·2	0·4	0·8	599	O	L	FC:PI
656b	*Descurainia bourgeauana* (Fourn.) O.E.Schulz	–[m]	Brassicaceae[j]	E	14	2	P	186	0·2	0·4	0·8	477	O	*Raphanus*[e]	FC:PI
657a	*Descurainia gilva* Svent.	Yes	Brassicaceae[j]	E	14	2	P	215	0·2	0·4	0·9	599	O	L	FC:PI
657b	*Descurainia gilva* Svent.	–[m]	Brassicaceae[j]	E	14	2	P	220	0·2	0·5	0·9	477	O	*Raphanus*[e]	FC:PI
658a	*Descurainia gonzalesii* Svent.	–[m]	Brassicaceae[j]	E	14	2	P	225	0·2	0·5	0·9	477	O	*Raphanus*[e]	FC:PI
659a	*Descurainia lemsii* Bramw.	–[m]	Brassicaceae[j]	E	14[o]	2	P	220	0·2	0·5	0·9	477	O	*Raphanus*[e]	FC:PI
660a	*Descurainia millefolia* (Jacq.) Webb & Berth.	–[m]	Brassicaceae[j]	E	14	2	P	215	0·2	0·4	0·9	477	O	*Raphanus*[e]	FC:PI
661a	*Desideria linearis* (N.Busch) Al-Shehbaz	Yes	Brassicaceae[j]	E	14	2	–[q]	1,350	1·4	2·8	5·5	599	O	L	FC:PI
662a	*Deuterocohnia longipetala* (Baker) Mez	Yes	Bromeliaceae	M	–[n]	–[p]	P	362	0·4	0·7	1·5	575	O	*Raphanus*[e]	FC:PI
663a	*Deuterocohnia schreiteri* A.Cast.	Yes	Bromeliaceae	M	–[n]	–[p]	P	391	0·4	0·8	1·6	575	O	*Raphanus*[e]	FC:PI
664a	*Deyeuxia* aff. *quadriseta*[l]	Yes	Poaceae[j]	M	56	8	P	6,455	6·6	13·2	26·4	528	O	–[w]	FC:PI
665a	*Deyeuxia aucklandica* (Hook.f.) Zotov	Yes	Poaceae[j]	M	42	6	P	5,428	5·6	11·1	22·2	476	O	*Actinidia*[e]	FC:PI
666a	*Deyeuxia aucklandica* (Hook.f.) Zotov[i]	Yes	Poaceae[j]	M	56	8	P	6,875	7·0	14·1	28·1	528	O	–[w]	FC:PI
667a	*Deyeuxia avenoides* (Hook.f.) Buchanan[i]	Yes	Poaceae[j]	M	70	10	P	6,616	6·8	13·5	27·1	528	O	–[w]	FC:PI
667b	*Deyeuxia avenoides* (Hook.f.) Buchanan[i]	Yes	Poaceae[j]	M	70	10	P	7,589	7·8	15·5	31·0	528	O	–[w]	FC:PI
667c	*Deyeuxia avenoides* (Hook.f.) Buchanan	Yes	Poaceae[j]	M	70	10	P	5,281	5·4	10·8	21·6	476	O	*Actinidia*[e]	FC:PI
668a	*Deyeuxia lacustris* Edgar & Connor	Yes	Poaceae[j]	M	28	4	P	7,888	8·1	16·1	32·3	528	O	–[w]	FC:PI

669a	*Deyeuxia quadriseta* (Labill.) Benth	Yes	Poaceae[j]	M	56	8	P	7,511	7·7	15·4	30·7	528	O	–[w]	FC:PI
669b	*Deyeuxia quadriseta* (Labill.) Benth.[i]	Yes	Poaceae[j]	M	56	8	P	4,499	4·6	9·2	18·4	476	O	*Actinidia*[e]	FC:PI
670a	*Deyeuxia youngii* (Hook.f.) Buchanan	Yes	Poaceae[j]	M	28	4	P	4,826	4·9	9·9	19·7	528	O	–[w]	FC:PI
671a	*Dichelachne crinita* (L.f.) Hook.f.	Yes	Poaceae[j]	M	70	10	P	8,000	8·2	16·4	32·7	528	O	–[w]	FC:PI
672a	*Dichelachne inaequiglumis* (Hack.) Edgar & Connor	Yes	Poaceae[j]	M	70	10	P	8,020	8·2	16·4	32·8	528	O	–[w]	FC:PI
673a	*Dichelachne lautumia* Edgar & Connor	Yes	Poaceae[j]	M	70	10	P	8,641	8·8	17·7	35·3	528	O	–[w]	FC:PI
674a	*Dichelachne micrantha* (Cav.) Domin.	Yes	Poaceae[j]	M	70	10	P	8,240	8·4	16·9	33·7	528	O	–[w]	FC:PI
675a	*Dicheranthus plocamoides* Webb	–[m]	Caryophyllaceae	E	16[o]	2	P	729	0·7	1·5	3·0	477	O	*Solan.*[e]	FC:PI
676a	*Digitaria ciliaris* (Retz.) Koeler	Yes	Poaceae[j]	M	–[n]	–[p]	A	1,260	1·3	2·6	5·2	556	O	*Raphanus*[e]	FC:PI
677a	*Digitaria coenicola* (F.Muell.) Hughes	–[m]	Poaceae[j]	M	–[n]	–[p]	P	601	0·6	1·2	2·5	526	O	A	FC:PI
678a	*Digitaria exilis* (Kipp.) Stapf	Yes	Poaceae[j]	M	36	4	A	956	1·0	2·0	3·9	556	O	*Glycine*[e]	FC:PI
679a	*Digitaria iburua* Stapf	Yes	Poaceae[j]	M	–[n]	–[p]	A	904	0·9	1·8	3·7	556	O	*Glycine*[e]	FC:PI
680a	*Digitaria lecardii* (Pilg.) Stapf[a]	Yes	Poaceae[j]	M	–[n]	–[p]	A	1,301	1·3	2·7	5·3	556	O	*Raphanus*[e]	FC:PI
681a	*Digitaria longiflora* (Retz.) Persoon	Yes	Poaceae[j]	M	–[n]	–[p]	AP	914	0·9	1·9	3·7	556	O	*Glycine*[e]	FC:PI
682a	*Digitaria ternata* (A. Rich) Stapf	Yes	Poaceae[j]	M	–[n]	–[p]	A	868	0·9	1·8	3·6	556	O	*Glycine*[e]	FC:PI
683a	*Dillenia indica* L.	No	Dilleniaceae	E	c. 52	–[p]	P	501	0·5	1·0	2·1	612	O	J	Fe
684e	*Dioscorea alata* L.[i]	Yes	Dioscoreaceae	M	40	4	P	489	0·5	1·0	2·0	538	O	G[c]	FC:EB
684f	*Dioscorea alata* L.[i]	Yes	Dioscoreaceae	M	40	4	P	616	0·6	1·3	2·5	538	O	G[c]	FC:EB
685a	*Dioscorea alata* L.	Yes	Dioscoreaceae	M	80	8	P	1,037	1·1	2·1	4·2	538	O	G[c]	FC:EB
686a	*Diospyros exculpata* Buch.-Ham.	No	Ebenaceae	E	–[n]	–[p]	P	2,814	2·9	5·8	11·5	501[ag]	O	B[c]	Fe
687a	*Diospyros kaki*[l]	No	Ebenaceae	E	–[n]	–[p]	P	2,484	2·5	5·1	10·2	563	O	G[c]	FC:PI
688a	*Diplotaxis catholica* (L.) DC.	No	Brassicaceae[j]	E	18	2	A	590	0·6	1·2	2·4	602	O	*Solan.*[e]	FC:PI
689a	*Diplotaxis erucoides* (L.) DC.	Yes	Brassicaceae[j]	E	14	2	A	499	0·5	1·0	2·0	599	O	L	FC:PI
690a	*Diplotaxis siifolia* Kunze	Yes	Brassicaceae[j]	E	20	–[p]	–[q]	548	0·6	1·1	2·2	599	O	L	FC:PI
691a	*Dodonaea triquetra*[l]	–[m]	Sapindaceae	E	–[n]	–[p]	P	680	0·7	1·4	2·8	526	O	A	FC:PI
692a	*Dodonaea viscosa* subsp. *angustissima*[l]	–[m]	Sapindaceae	E	–[n]	–[p]	P	616	0·6	1·3	2·5	526	O	A	FC:PI
692b	*Dodonaea viscosa* subsp. *spatulata*[l]	–[m]	Sapindaceae	E	–[n]	–[p]	P	645	0·7	1·3	2·6	526	O	A	FC:PI
692c	*Dodonaea viscosa* subsp. *cuneata*[l]	–[m]	Sapindaceae	E	–[n]	–[p]	P	655	0·7	1·3	2·7	526	O	A	FC:PI
693a	*Dorycnium eriophtalmum* Webb & Berth.	–[m]	Fabaceae[j]	E	14[o]	2	P	1,095	1·1	2·2	4·5	477	O	*Glycine*[e]	FC:PI
694a	*Draba altaica* (C.A.Mey.) Bunge	Yes	Brassicaceae[j]	E	18	–[p]	–[q]	303	0·3	0·6	1·2	599	O	L	FC:PI
694b	*Draba altaica* (C.A.Mey.) Bunge[ai]	Yes	Brassicaceae[j]	E	16	2[z]	P	274	0·3	0·6	1·1	505[ai]	O	G[c]	CIA
695a	*Draba doerfleri* Wettst.	Yes	Brassicaceae[j]	E	16	–[p]	–[q]	509	0·5	1·0	2·1	599	O	L	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
696a	*Draba fladnizensis* Wulfen[i, ai]	Yes	Brassicaceae[j]	E	16	2[z]	P	269	0·3	0·6	1·1	505[ai]	O	G[c]	CIA
696b	*Draba fladnizensis* Wulfen[i, ai]	Yes	Brassicaceae[j]	E	16	2[z]	P	303	0·3	0·6	1·2	505[ai]	O	G[c]	CIA
697a	*Draba glomerata* Royle	Yes	Brassicaceae[j]	E	–[n]	–[p]	–[q]	391	0·4	0·8	1·6	599	O	L	FC:PI
698a	*Draba lactea* Adams[ai]	Yes	Brassicaceae[j]	E	32	4[z]	P	567	0·6	1·2	2·3	505[ai]	O	G[c]	CIA
699a	*Draba lactea* Adams[ai]	Yes	Brassicaceae[j]	E	48	6[z]	P	954	1·0	2·0	3·9	505[ai]	O	G[c]	CIA
700a	*Draba lanceolata* Royle	Yes	Brassicaceae[j]	E	32[o]	–[p]	–[q]	636	0·7	1·3	2·6	599	O	L	FC:PI
701a	*Draba lonchocarpa* Rydb.[ai]	Yes	Brassicaceae[j]	E	16	2[z]	P	298	0·3	0·6	1·2	505[ai]	O	G[c]	CIA
702a	*Draba nemorosa* L.	–[m]	Brassicaceae[j]	E	16	–[p]	–[q]	237	0·2	0·5	1·0	509	O	–[w]	FC:PI
703a	*Draba nivalis* Lilj.[i, ai]	Yes	Brassicaceae[j]	E	16	2[z]	P	308	0·3	0·6	1·3	505[ai]	O	G[c]	CIA
703b	*Draba nivalis* Lilj.[i, ai]	Yes	Brassicaceae[j]	E	16	2[z]	P	254	0·3	0·5	1·0	505[ai]	O	G[c]	CIA
704a	*Draba palanderiana* Kjellm.[i, ai]	Yes	Brassicaceae[j]	E	16	2[z]	P	274	0·3	0·6	1·1	505[ai]	O	G[c]	CIA
705a	*Draba subcapitata* Simmons[ai]	Yes	Brassicaceae[j]	E	16	2[z]	P	245	0·3	0·5	1·0	505[ai]	O	G[c]	CIA
706a	*Draba verna* Besser	Yes	Brassicaceae[j]	E	34, 36, 52[o]	–[p]	–[q]	391	0·4	0·8	1·6	599	O	L	FC:PI
707a	*Dracaena draco* L. subsp. *draco*	–[m]	Asparagaceae[k]	M	40[o]	4	P	905	0·9	1·9	3·7	552	O	*Glycine*[e]	FC:PI
708b	*Dracunculus canariensis* Kunth	–[m]	Araceae	M	28[o]	4	P	3,863	4·0	7·9	15·8	477	O	G[c]	FC:PI
709b	*Duchesnea indica* Focke	No	Rosaceae	E	–[n]	–[p]	P	2,049	2·1	4·2	8·4	492	O	*Glycine*[e]	FC:PI
710a	*Dyckia estevesii* Rauh	Yes	Bromeliaceae	M	–[n]	–[p]	P	782	0·8	1·6	3·2	575	O	*Raphanus*[e]	FC:PI
711a	*Dyckia floribunda* Griseb.	Yes	Bromeliaceae	M	–[n]	–[p]	P	773	0·8	1·6	3·2	575	O	*Raphanus*[e]	FC:PI
712a	*Ecdeiocolea monostachya* F.Muell.	Yes	Ecdeiocoleaceae	M	c. 38	–[p]	P	966	1·0	2·0	4·0	612	O	K	FC:PI
713a	*Echinopogon ovatus* (G.Forst.) P.Beauv.	Yes	Poaceae[j]	M	42[o]	6	P	5,306	5·4	10·9	21·7	528	O	–[w]	FC:PI
714a	*Echinops bannaticus* Rochel ex Schrad.	No	Asteraceae[j]	E	30	2	P	3,462	3·5	7·1	14·2	502	O	F[b2]	FC:PI
715a	*Echinops bithynicus* Boiss.	No	Asteraceae[j]	E	28	2	P	3,237	3·3	6·6	13·2	502	O	F[b2]	FC:PI
716a	*Echinops cornigerus* DC.	No	Asteraceae[j]	E	28	2	P	2,988	3·1	6·1	12·2	502	O	F[b2]	FC:PI
717a	*Echinops ecbatanus* Bornm. ex Rech.	Yes	Asteraceae[j]	E	30	2	P	2,626	2·7	5·4	10·7	502	O	F[b2]	FC:PI
718a	*Echinops exaltatus* Schrad.	No	Asteraceae[j]	E	30	2	P	3,663	3·7	7·5	15·0	502	O	F[b2]	FC:PI
719a	*Echinops hedgei* Kit Tan	No	Asteraceae[j]	E	30	2	P	4,489	4·6	9·2	18·4	502	O	F[b2]	FC:PI
720a	*Echinops humilis* Bieb.	No	Asteraceae[j]	E	30	2	P	4,210	4·3	8·6	17·2	502	O	F[b2]	FC:PI
721a	*Echinops nanus* Bunge	Yes	Asteraceae[j]	E	28	2	A	1,888	1·9	3·9	7·7	502	O	F[b2]	FC:PI
722a	*Echinops niveus* Wall.	No	Asteraceae[j]	E	28	2	P	3,511	3·6	7·2	14·4	502	O	F[b2]	FC:PI
723a	*Echinops orientalis* Trautv.	No	Asteraceae[j]	E	c. 30	2	P	3,756	3·8	7·7	15·4	502	O	F[b2]	FC:PI
724a	*Echinops persicus* Stev. & Fisch. ex Fisch.	No	Asteraceae[j]	E	c. 30	2	P	3,496	3·6	7·2	14·3	502	O	F[b2]	FC:PI
725a	*Echinops ruthenicus* (Fisch.) M.B.	No	Asteraceae[j]	E	30	2	P	3,687	3·8	7·5	15·1	502	O	F[b2]	FC:PI
726a	*Echinops saissanicus* (B.Keller) Bobrov	Yes	Asteraceae[j]	E	32	2	P	4,597	4·7	9·4	18·8	502	O	F[b2]	FC:PI

727a	*Echinops siculus* Strobl	No	Asteraceae[j]	E	30	2	P	4,054	4·1	8·3	16·6	502	O	F[b2]	FC:PI
728a	*Echinops sphaerocephalus* L.	No	Asteraceae[j]	E	30	2	P	3,775	3·9	7·7	15·4	502	O	F[b2]	FC:PI
729a	*Echinops spinosissimus* Turra subsp. *spinosissimus*	No	Asteraceae[j]	E	28	2	P	3,623	3·7	7·4	14·8	502	O	F[b2]	FC:PI
730a	*Echinops strigosus* L.	Yes	Asteraceae[j]	E	32	2	A	1,223	1·3	2·5	5·0	502	O	F[b2]	FC:PI
731a	*Echinops szowitsii* Fisch. & C.A.Mey. ex DC.	No	Asteraceae[j]	E	30	2	P	3,609	3·7	7·4	14·8	502	O	F[b2]	FC:PI
732a	*Echinops talassicus* Golosk.	Yes	Asteraceae[j]	E	28	2	P	5,037	5·2	10·3	20·6	502	O	F[b2]	FC:PI
733a	*Echinops tournefortii* Ledeb.	No	Asteraceae[j]	E	30	2	P	3,599	3·7	7·4	14·7	502	O	F[b2]	FC:PI
734a	*Echinops tschimganicus* B.Fedtsch.	Yes	Asteraceae[j]	E	32	2	P	2,518	2·6	5·2	10·3	502	O	F[b2]	FC:PI
735a	*Echinops viscosus* subsp. *viscosus* DC.	No	Asteraceae[j]	E	28	2	P	3,399	3·5	7·0	13·9	502	O	F[b2]	FC:PI
736a	*Echium aculeatum* Poir.	–[m]	Boraginaceae	E	16 (32)[o]	2	P	494	0·5	1·0	2·0	552	O	*Raphanus*[e]	FC:PI
737a	*Echium bethencourtii* A.Santos	–[m]	Boraginaceae	E	16	2	P	484	0·5	1·0	2·0	552	O	*Raphanus*[e]	FC:PI
738a	*Echium bonnetii* Coincy	–[m]	Boraginaceae	E	16	2	A	313	0·3	0·6	1·3	552	O	*Raphanus*[e]	FC:PI
739a	*Echium brevirame* Sprague & Hutch.	–[m]	Boraginaceae	E	16 (32)[o]	2	P	474	0·5	1·0	1·9	552	O	*Raphanus*[e]	FC:PI
740a	*Echium decaisnei* subsp. *decaisnei* Webb	–[m]	Boraginaceae	E	16[o]	2	P	440	0·5	0·9	1·8	552	O	*Raphanus*[e]	FC:PI
741a	*Echium gentianoides* Webb ex Coincy	–[m]	Boraginaceae	E	16[o]	2	P	460	0·5	0·9	1·9	552	O	*Raphanus*[e]	FC:PI
742a	*Echium hierrense* Webb ex Bolle	–[m]	Boraginaceae	E	16[o]	2	P	494	0·5	1·0	2·0	552	O	*Raphanus*[e]	FC:PI
743a	*Echium leucophaeum* Webb ex. Sprague & Hutch.	–[m]	Boraginaceae	E	16[o]	2	P	474	0·5	1·0	1·9	552	O	*Raphanus*[e]	FC:PI
744a	*Echium simplex* DC.	–[m]	Boraginaceae	E	16[o]	2	P	460	0·5	0·9	1·9	552	O	*Raphanus*[e]	FC:PI
745a	*Echium strictum* L.f. subsp. *strictum*	–[m]	Boraginaceae	E	16 (32)[o]	2	P	411	0·4	0·8	1·7	552	O	*Raphanus*[e]	FC:PI
746a	*Echium triste* Svent. subsp. *triste*	–[m]	Boraginaceae	E	16 (32)[o]	2	P	474	0·5	1·0	1·9	552	O	*Raphanus*[e]	FC:PI
747a	*Echium virescens* DC.	–[m]	Boraginaceae	E	16 (24, 32)[o]	2	P	450	0·5	0·9	1·8	552	O	*Raphanus*[e]	FC:PI
748a	*Echium webbii* Coincy	–[m]	Boraginaceae	E	16[o]	2	P	479	0·5	1·0	2·0	552	O	*Raphanus*[e]	FC:PI
749a	*Einadia nutans* (R.Br.) A.J.Scott	–[m]	Amaranthaceae	E	–[n]	–[p]	P	983	1·0	2·0	4·0	526	O	A	FC:PI
750a	*Elaeis guineensis* Jacq.	No	Arecaceae[j]	M	32[o]	2	P	1,839	1·9	3·8	7·5	548	O	*Petunia*[e]	FC:PI
751a	*Elymus apricus* Á.Löve & Connor	Yes	Poaceae[j]	M	42[o]	6	P	13,790	14·1	28·2	56·4	528	O	–[w]	FC:PI
752b	*Elymus elongatus* (= *Agropyron elongatum*) (Host) Runemark	No[m1]	Poaceae[j]	M	14	2	P	5,712	5·8	11·7	23·4	605	O	F-2118p	FC:PI
753a	*Elymus enysii* (Kirk) Á.Löve & Connor	Yes	Poaceae[j]	M	28[o]	4	P	10,044	10·3	20·5	41·1	528	O	–[w]	FC:PI
754a	*Elymus falcis* Connor	Yes	Poaceae[j]	M	42	6	P	13,482	13·8	27·6	55·1	528	O	–[w]	FC:PI
755a	*Elymus multiflorus* (Hook.f.) Á.Löve & Connor	Yes	Poaceae[j]	M	42[o]	6	P	12,303	12·6	25·2	50·3	528	O	–[w]	FC:PI
756a	*Elymus sacandros* Connor	Yes	Poaceae[j]	M	42	6	P	13,565	13·9	27·7	55·5	528	O	–[w]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[$])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
757a	*Elymus solandri* (Steud.) Connor[i]	Yes	Poaceae[j]	M	42	6	P	13,966	14·3	28·6	57·1	528	O	–[w]	FC:PI
758a	*Elymus tenuis* (Buchanan) Á.Löve & Connor	Yes	Poaceae[j]	M	56	8	P	15,692	16·0	32·1	64·2	528	O	–[w]	FC:PI
759a	*Elytrigia intermedia* (Host) Nevaki	Yes	Poaceae[j]	M	42	6	P	13,223	13·5	27·0	54·1	593	O	A[c]	FC:PI
760a	*Elytrigia intermedia* (Host) Nevaki	Yes	Poaceae[j]	M	63	9	P	–[t]	–[t]	40·6	81·1	593	O	A[c]	FC:PI
761a	*Elytrigia repens* (L.) Nevski	Yes	Poaceae[j]	M	42	6	P	11,379	11·6	23·3	46·5	593	O	A[c]	FC:PI
762a	*Elytrigia repens* (L.) Nevski	Yes	Poaceae[j]	M	63	9	P	–[t]	–[t]	34·9	69·8	593	O	A[c]	FC:PI
763a	*Empetrum hermaphroditum* Hagerup	Yes	Ericaceae[k]	E	52[o]	4	P	1,252	1·3	2·6	5·1	496	O	*Raphanus*[e]	FC:PI
764a	*Empetrum nigrum* L.	Yes	Ericaceae[k]	E	26[o]	2	P	631	0·6	1·3	2·6	496	O	*Raphanus*[e]	FC:PI
765a	*Encholirium irwinii* L.B.Sm	Yes	Bromeliaceae	M	–[n]	–[p]	P	851	0·9	1·7	3·5	575	O	*Raphanus*[e]	FC:PI
766a	*Ensete gilletii* (De Wild.) Cheesman	No	Musaceae	M	18	2	P	592	0·6	1·2	2·4	503	O	*Glycine*[e]	FC:PI
767a	*Enteropogon acicularis* (Lindl.) Laxarides	–[m]	Poaceae[j]	M	–[n]	–[p]	P	523	0·5	1·1	2·1	526	O	A	FC:PI
768b	*Epilobium hirsutum* L.	No	Onagraceae	E	36[o]	2	P	406	0·4	0·8	1·7	577	O	*Sorghum*[e]	FC:PI
769a	*Erigeron calderae* Hans.	–[m]	Asteraceae[j]	E	18	2	P	1,516	1·6	3·1	6·2	477	O	*Glycine*[e]	FC:PI
770b	*Eruca sativa* Mill.	Yes	Brassicaceae[j]	E	22	–[p]	A	655	0·7	1·3	2·7	599	O	L	FC:PI
771b	*Erycina diaphana* Schltr.	Yes	Orchidaceae	M	–[n]	–[p]	P	1,888	1·9	3·9	7·7	504[ah]	O	F	Fe
772a	*Erycina pusilla* (L.) N.H.Williams & M.W.Chase	Yes	Orchidaceae	M	–[n]	–[p]	P	1,467	1·5	3·0	6·0	504[ah]	O	–[w]	FC:DAPI
773a	*Erysimum bicolor* (Hornem.) DC.	–[m]	Brassicaceae[j]	E	28[o]	4	P	567	0·6	1·2	2·3	477	O	*Solan.*[e]	FC:PI
774a	*Erysimum bicolor* (Hornem.) DC.	Yes	Brassicaceae[j]	E	42	6	P	743	0·8	1·5	3·0	599	O	L	FC:PI
775a	*Erysimum cheiranthoides* L.	Yes	Brassicaceae[j]	E	46-48	–[p]	–[q]	812	0·8	1·7	3·3	599	O	L	FC:PI
776a	*Erysimum scoparium* (Brouss. ex Willd.) Wettst.	–[m]	Brassicaceae[j]	E	28	4	P	528	0·5	1·1	2·2	477	O	*Solan.*[e]	FC:PI
777a	*Erythrina blake* (Hort.) Parker	No	Fabaceae[j]	E	42[o]	2	P	1,308	1·3	2·7	5·4	501[ag]	O	B[c]	Fe
778a	*Erythrina caffra* Blanco	No	Fabaceae[j]	E	42[o]	2	P	1,724	1·8	3·5	7·1	501[ag]	O	B[c]	Fe
779a	*Erythrina corallodendron* L.	No	Fabaceae[j]	E	42[o]	2	P	1,281	1·3	2·6	5·2	501[ag]	O	B[c]	Fe
780a	*Erythrina fusca* Lour.	No	Fabaceae[j]	E	42[o]	2[p]	P	1,100	1·1	2·3	4·5	501[ag]	O	B[c]	Fe
781a	*Erythrina humeana* Spreng	No	Fabaceae[j]	E	–[n]	–[p]	P	1,377	1·4	2·8	5·6	501[ag]	O	B[c]	Fe
782a	*Erythrina lithosperma* Blume ex Miq.	No	Fabaceae[j]	E	42[o]	2	P	1,450	1·5	3·0	5·9	501[ag]	O	B[c]	Fe

783a	*Erythrina lysistemon* Hutch.	No	Fabaceae[j]	E	42[o]	2	P	1,391	1·4	2·8	5·7	501[ag]	O	B[c]	Fe
784a	*Erythrina resupinata* Moritz	No	Fabaceae[j]	E	42[o]	2	P	1,731	1·8	3·5	7·1	501[ag]	O	B[c]	Fe
785a	*Erythrina stricta* Roxb.	No	Fabaceae[j]	E	42[o]	2	P	990	1·0	2·0	4·1	501[ag]	O	B[c]	Fe
786b	*Erythrina suberosa* Roxb.	No	Fabaceae[j]	E	42[o]	2	P	1,606	1·6	3·3	6·6	501[ag]	O	B[c]	Fe
787a	*Erythrina variegata* L.	No	Fabaceae[j]	E	42[o]	2	P	1,667	1·7	3·4	6·8	501[ag]	O	B[c]	Fe
788a	*Erythrina velutina* Willd.	No	Fabaceae[j]	E	42[o]	2	P	1,203	1·2	2·5	4·9	501[ag]	O	B[c]	Fe
789a	*Erythrina vespertilio* Benth.	No	Fabaceae[j]	E	42[o]	2	P	1,095	1·1	2·2	4·5	501[ag]	O	B[c]	Fe
790a	*Eucalyptus camaldulensis* Dehnh.	No	Myrtaceae	E	22[o]	2	P	601	0·6	1·2	2·5	516	O	*Gallus*[f]	FC:DAPI
791a	*Eucalyptus citriodora* Hook.	No	Myrtaceae	E	22[o]	2	P	377	0·4	0·8	1·5	516	O	*Gallus*[f]	FC:DAPI
792a	*Eucalyptus dunnii* Maiden	No	Myrtaceae	E	22[o]	2	P	538	0·6	1·1	2·2	516	O	*Gallus*[f]	FC:DAPI
793a	*Eucalyptus elata* Dehnh.	–[m]	Myrtaceae	E	–[n]	–[p]	P	597	0·6	1·2	2·4	526	O	A	FC:PI
794b	*Eucalyptus globulus* Labill.	No	Myrtaceae	E	22[o]	2	P	533	0·5	1·1	2·2	516	O	*Gallus*[f]	FC:DAPI
794c	*Eucalyptus globulus* Labill.[aj]	No	Myrtaceae	E	22[o]	2	P	685	0·7	1·4	2·8	506[aj]	O	*Solan.*[e]	FC:PI
795a	*Eucalyptus grandis* Hill ex Maiden	No	Myrtaceae	E	22[o]	2	P	650	0·7	1·3	2·7	516	O	*Gallus*[f]	FC:DAPI
796a	*Eucalyptus pellita* F.Muell.	No	Myrtaceae	E	22[o]	2	P	670	0·7	1·4	2·7	516	O	*Gallus*[f]	FC:DAPI
797a	*Eucalyptus resinifera* Smith	No	Myrtaceae	E	22[o]	2	P	626	0·6	1·3	2·6	516	O	*Gallus*[f]	FC:DAPI
798a	*Eucalyptus robusta* Smith	No	Myrtaceae	E	22[o]	2	P	660	0·7	1·4	2·7	516	O	*Gallus*[f]	FC:DAPI
799a	*Eucalyptus saligna* Smith	No	Myrtaceae	E	22[o]	2	P	719	0·7	1·5	2·9	516	O	*Gallus*[f]	FC:DAPI
800a	*Eucalyptus tereticornis* Smith	No	Myrtaceae	E	22[o]	2	P	587	0·6	1·2	2·4	516	O	*Gallus*[f]	FC:DAPI
801a	*Eucalyptus torelliana* F.Muell.	No	Myrtaceae	E	22[o]	2	P	391	0·4	0·8	1·6	516	O	*Gallus*[f]	FC:DAPI
802a	*Eucalyptus urophylla* S.T.Blake	No	Myrtaceae	E	22[o]	2	P	655	0·7	1·3	2·7	516	O	*Gallus*[f]	FC:DAPI
803a	*Euclidium syriacum* (L.) R.Br.	Yes	Brassicaceae[j]	E	14	2	–[q]	264	0·3	0·5	1·1	599	O	L	FC:PI
804a	*Euphorbia aphylla* Brouss. ex Willd.	–[m]	Euphorbiaceae	E	20[o]	2	P	2,161	2·2	4·4	8·8	552	O	H[c]	FC:PI
805a	*Euphorbia atropurpurea* (Brouss.) Webb & Berthel.	–[m]	Euphorbiaceae	E	20[o]	2	P	2,029	2·1	4·2	8·3	552	O	H[c]	FC:PI
806a	*Euphorbia obtusifolia* Poir. in Lam.	–	Euphorbiaceae	E	20	2	P	2,098	2·1	4·3	8·6	552	O	H[c]	FC:PI
807a	*Euphorbia peplus* L.	No	Euphorbiaceae	E	22[o]	2	P	337	0·3	0·7	1·4	563	O	*Solan.*[e]	FC:PI
808a	*Euptelea pleiosperma* Hook.f. & Thomson	No	Eupteleaceae	E	28	–[p]	P	653	0·7	1·3	2·7	612	O	*Solan.*[e]	FC:PI
809a	*Eutaxia microphylla* (R.Br.) C.H.Wright & Dewar	–[m]	Fabaceae[j]	E	–[n]	–[p]	–[q]	1,584	1·6	3·2	6·5	526	O	A	FC:PI
810e	*Fagus sylvatica* L.	No	Fagaceae	E	–[n]	–[p]	P	636	0·7	1·3	2·6	492	O	*Glycine*[e]	FC:PI
810f	*Fagus sylvatica* L.	Yes	Fagaceae	E	–[n]	–[p]	P	709	0·7	1·5	2·9	489	O	–[w]	FC:EB
811a	*Festuca actae* Connor	Yes	Poaceae[j]	M	42	6	P	8,078	8·3	16·5	33·0	528	O	–[w]	FC:PI
812a	*Festuca acuminata* Gaudin	–[m]	Poaceae[j]	M	14[o]	2	P	3,216	3·3	6·6	13·2	555	O	G[c]	FC:PI
813a	*Festuca airoides* Lam.[i]	–[m]	Poaceae[j]	M	14[o]	2	P	2,387	2·4	4·9	9·8	555	O	G[c]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount				Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
								1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)				
814a	*Festuca alpestris* Roem. & Schult.	–[m]	Poaceae[j]	M	14	2	P	4,348	4·4	8·9	17·8	555	O	G[c]	FC:PI
815a	*Festuca alpina* subsp. *alpina* Suter[i]	–[m]	Poaceae[j]	M	14[o]	2	P	2,146	2·2	4·4	8·8	555	O	G[c]	FC:PI
815b	*Festuca alpina* s.l. (alfrediana) Foggi & Signorini)	–[m]	Poaceae[j]	M	14[o]	2	P	2,243	2·3	4·6	9·2	555	O	G[c]	FC:PI
816a	*Festuca altaica* Trin.	–[m]	Poaceae[j]	M	28[o]	4	P	7,335	7·5	15·0	30·0	555	O	G[c]	FC:PI
817a	*Festuca altissima* All.	–	Poaceae[j]	M	14[o]	2	P	4,371	4·5	8·9	17·9	555	O	G[c]	FC:PI
818a	*Festuca amethystina* L. subsp. *amethystina*	–[m]	Poaceae[j]	M	28	4	P	6,342	6·5	13·0	25·9	555	O	G[c]	FC:PI
819a	*Festuca ampla* Hack. subsp. *ampla*	Yes	Poaceae[j]	M	28[z]	4[z]	P	4,274	4·4	8·7	17·5	582	O	H[c]	FC:PI
819b	*Festuca ampla* Hack. subsp. *transtagana* Hack.	Yes	Poaceae[j]	M	28[z]	4[z]	P	4,479	4·6	9·2	18·3	582	O	H[c]	FC:PI
820a	*Festuca arundinacea* Schreb. subsp. *uechtritziana*	–[m]	Poaceae[j]	M	42[o]	6	P	8,303	8·5	17·0	34·0	555	O	G[c]	FC:PI
820b	*Festuca arundinacea* Schreb. subsp. *arundinacea*	–[m]	Poaceae[j]	M	42[o]	6	P	8,421	8·6	17·2	34·4	555	O	G[c]	FC:PI
820c	*Festuca arundinacea* Schreb. subsp. *mediterranea* (Hack.) K.Richt.	Yes	Poaceae[j]	M	42[o]	6	P	7,795	8·0	15·9	31·9	582	O	G[c]	FC:PI
821a	*Festuca arvernensis* Auquier, Kerguélen & Markgr.-Dann. subsp. *arvernensis*	–[m]	Poaceae[j]	M	14[o]	2	P	1,901	1·9	3·9	7·8	555	O	G[c]	FC:PI
822a	*Festuca arvernensis* Auquier, Kerguélen & Markgr.-Dann. subsp. *costei* (St Yves) Auquier & Kerguélen	–[m]	Poaceae[j]	M	28	4	P	4,449	4·5	9·1	18·2	555	O	G[c]	FC:PI
823a	*Festuca auquieri* Kerguélen	–[m]	Poaceae[j]	M	28[o]	4	P	4,626	4·7	9·5	18·9	555	O	G[c]	FC:PI
824a	*Festuca balcanica* (Acht.) Markgr.-Dann. subsp. *balcanica*	–[m]	Poaceae[j]	M	14[o]	2	P	3,624	3·7	7·4	14·8	555	O	G[c]	FC:PI
825a	*Festuca billyii* Kerguélen & Plonka	–[m]	Poaceae[j]	M	42[o]	6	P	6,533	6·7	13·4	26·7	555	O	G[c]	FC:PI
826a	*Festuca bosniaca* Kumm. & Sendtn. subsp. *pirinica* (Acht.) Markgr.-Dann.	–[m]	Poaceae[j]	M	14[o]	2	P	3,414	3·5	7·0	14·0	555	O	G[c]	FC:PI
826b	*Festuca bosniaca* Kumm. & Sendtn. subsp. *bosniaca*	–[m]	Poaceae[j]	M	14[o]	2	P	3,617	3·7	7·4	14·8	555	O	G[c]	FC:PI

827a	*Festuca brachyphylla* Schultes	No	Poaceae[j]	M	42[o]	6	P	5,746	5·9	11·8	23·5	609	O	*Gallus*[f]	FC:PI
828a	*Festuca brevipila* R.Tracey	No	Poaceae[j]	M	42	6	P	6,137	6·3	12·6	25·1	609	O	*Gallus*[f]	FC:PI
828b	*Festuca brevipila* R.Tracey	–[m]	Poaceae[j]	M	42[o]	6	P	6,890	7·0	14·1	28·2	555	O	G[c]	FC:PI
829a	*Festuca brigantina* (Markgr.-Dann.) Markgr.-Dann.	–[m]	Poaceae[j]	M	56	8	P	9,839	10·1	20·1	40·2	555	O	G[c]	FC:PI
829b	*Festuca brigantina* Markgr.-Dann. subsp. *brigantina*	Yes	Poaceae[j]	M	56	8	P	8,352	8·5	17·1	34·2	582	O	G[c]	FC:PI
830a	*Festuca callieri* (Hack.) Markgr.	–	Poaceae[j]	M	28[o]	4	P	4,778	4·9	9·8	19·5	555	O	G[c]	FC:PI
831a	*Festuca calva* (Hack.) K.Richt.	–	Poaceae[j]	M	14[o]	2	P	3,570	3·7	7·3	14·6	555	O	G[c]	FC:PI
832a	*Festuca carnuntina* R.Tracey	–[m]	Poaceae[j]	M	42[o]	6	P	6,817	7·0	13·9	27·9	555	O	G[c]	FC:PI
833a	*Festuca cf. taurica* (Hack.) Troutv.	–[m]	Poaceae[j]	M	14[o]	2	P	2,292	2·3	4·7	9·4	555	O	G[c]	FC:PI
834a	*Festuca cinerea* Vill.	–	Poaceae[j]	M	28[o]	4	P	4,871	5·0	10·0	19·9	555	O	G[c]	FC:PI
835a	*Festuca circummediterranea* Patzke	–	Poaceae[j]	M	14	2	P	2,657	2·7	5·4	10·9	555	O	G[c]	FC:PI
836a	*Festuca circummediterranea* Patzke s.l.	–	Poaceae[j]	M	28[o]	4	P	4,880	5·0	10·0	20·0	555	O	G[c]	FC:PI
837a	*Festuca coxii* (Petrie) Hack.	Yes	Poaceae[j]	M	56	8	P	10,514	10·8	21·5	43·0	528	O	–[w]	FC:PI
838a	*Festuca csikhegyensis* Simonk.	–	Poaceae[j]	M	28	4	P	4,621	4·7	9·5	18·9	555	O	G[c]	FC:PI
839a	*Festuca dalmatica* (Hack.) K.Richt.	–	Poaceae[j]	M	28[o]	4	P	4,848	5·0	9·9	19·8	555	O	G[c]	FC:PI
840a	*Festuca deflexa* Connor	Yes	Poaceae[j]	M	42	6	P	7,834	8·0	16·0	32·0	528	O	–[w]	FC:PI
841a	*Festuca degenii* (St-Yves) Markgr.-Dann.	–	Poaceae[j]	M	28[o]	4	P	4,924	5·0	10·1	20·1	555	O	G[c]	FC:PI
842a	*Festuca drymeia* Mert. & Koch	–	Poaceae[j]	M	14[o]	2	P	4,783	4·9	9·8	19·6	555	O	G[c]	FC:PI
843a	*Festuca durandoi* (Hack.) Rivas Ponce & Cebolla var. *livida*	–	Poaceae[j]	M	28[o]	4	P	7,169	7·3	14·7	29·3	555	O	G[c]	FC:PI
844a	*Festuca duriotagana* Franco & Rocha Afonso	–	Poaceae[j]	M	70	10	P	9,917	10·1	20·3	40·6	555	O	G[c]	FC:PI
844b	*Festuca duriotagana* Franco & Rocha Afonso var. *barbata*	Yes	Poaceae[j]	M	70	10	P	10,103	10·3	20·7	41·3	582	O	G[c]	FC:PI
845a	*Festuca duvalii* (St-Yves) Stohr	–	Poaceae[j]	M	28[o]	4	P	4,958	5·1	10·1	20·3	555	O	G[c]	FC:PI
846a	*Festuca eggleri* R.Tracey	–	Poaceae[j]	M	14[o]	2	P	2,375	2·4	4·9	9·7	555	O	G[c]	FC:PI
847a	*Festuca elegans* Boiss. subsp. *merinoi* (Pau) Fuente & Ortúñez	Yes	Poaceae[j]	M	28[o]	4	P	6,020	6·2	12·3	24·6	582	O	G[c]	FC:PI
848a	*Festuca exaltata* C.Presl	–	Poaceae[j]	M	14[o]	2	P	4,756	4·9	9·7	19·5	555	O	G[c]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
849a	*Festuca extremiorientalis* Ohwi	–	Poaceae[j]	M	28[o]	4	P	6,587	6·7	13·5	26·9	555	O	G[c]	FC:PI
850a	*Festuca filiformis* Pourr.	–	Poaceae[j]	M	14[o]	2	P	2,451	2·5	5·0	10·0	555	O	G[c]	FC:PI
850b	*Festuca filiformis* Pourr.	No	Poaceae[j]	M	14	2	P	2,367	2·4	4·8	9·7	609	O	*Gallus*[f]	FC:PI
851a	*Festuca gamisansii* Kerguélen subsp. *aethaliae* Signorini & Foggi	–	Poaceae[j]	M	70	10	P	11,775	12·0	24·1	48·2	555	O	G[c]	FC:PI
852a	*Festuca gautieri* Kerguélen subsp. *scoparia* (A.Kern. & Hack.) Kerguélen	–	Poaceae[j]	M	14[o]	2	P	2,991	3·1	6·1	12·2	555	O	G[c]	FC:PI
853a	*Festuca gigantea* (L.) Vill.	–	Poaceae[j]	M	42[o]	6	P	10,147	10·4	20·8	41·5	555	O	G[c]	FC:PI
854a	*Festuca glauca* Vill.	–	Poaceae[j]	M	42[o]	6	P	6,954	7·1	14·2	28·4	555	O	G[c]	FC:PI
855a	*Festuca guestfalica* Reichenb.	–	Poaceae[j]	M	28[o]	4	P	4,782	4·9	9·8	19·6	555	O	G[c]	FC:PI
856a	*Festuca guinochetii* (Bidault) S.Arndt.	–	Poaceae[j]	M	70[o]	10	P	11,208	11·5	22·9	45·8	555	O	G[c]	FC:PI
857a	*Festuca hallerii* All.[i]	–	Poaceae[j]	M	14[o]	2	P	2,643	2·7	5·4	10·8	555	O	G[c]	FC:PI
858a	*Festuca henriquesii* Hack.	Yes	Poaceae[j]	M	14	2	P	2,866	2·9	5·9	11·7	582	O	G[c]	FC:PI
859a	*Festuca heteromalla* Pourr.	–	Poaceae[j]	M	56[o]	8	P	8,015	8·2	16·4	32·8	555	O	G[c]	FC:PI
860a	*Festuca heteropachys* (St-Yves) Auquier	–	Poaceae[j]	M	28[o]	4	P	4,810	4·9	9·8	19·7	555	O	G[c]	FC:PI
861a	*Festuca heterophylla* Lam.	–	Poaceae[j]	M	28[o]	4	P	5,535	5·7	11·3	22·6	555	O	G[c]	FC:PI
862a	*Festuca hirtovaginata* (Acht.) Markgr.-Dann.	–	Poaceae[j]	M	42[o]	6	P	6,836	7·0	14·0	28·0	555	O	G[c]	FC:PI
863a	*Festuca humifusa* Brullo & R.Guarino	–	Poaceae[j]	M	14	2	P	2,559	2·6	5·2	10·5	555	O	G[c]	FC:PI
864a	*Festuca idahoenis* Elmer	No	Poaceae[j]	M	28[o]	4	P	5,027	5·1	10·3	20·6	609	O	*Gallus*[f]	FC:PI
865a	*Festuca inops* De Not.[i]	–[m]	Poaceae[j]	M	14[o]	2	P	2,381	2·4	4·9	9·7	555	O	G[c]	FC:PI
866a	*Festuca laevigata* Gaudin[i]	–	Poaceae[j]	M	56	8	P	9,149	9·4	18·7	37·4	555	O	G[c]	FC:PI
867a	*Festuca laxa* Host	–[m]	Poaceae[j]	M	28[o]	4	P	6,323	6·5	12·9	25·9	555	O	G[c]	FC:PI
868a	*Festuca lemanii* Bast.	–[m]	Poaceae[j]	M	42[o]	6	P	6,826	7·0	14·0	27·9	555	O	G[c]	FC:PI
869a	*Festuca lenensis* Drobov[au]	No	Poaceae[j]	M	14[o]	2	P	2,616	2·7	5·4	10·7	609[au]	O	*Gallus*[f]	FC:PI
870a	*Festuca luciarum* Connor	Yes	Poaceae[j]	M	56	8	P	9,707	9·9	19·9	39·7	528	O	–[w]	FC:PI
871a	*Festuca madida* Connor	Yes	Poaceae[j]	M	28	4	P	4,743	4·9	9·7	19·4	476	O	*Actinidia*[e]	FC:PI
872a	*Festuca malyschevii* E.B.Alexeev	–[m]	Poaceae[j]	M	14[o]	2	P	3,416	3·5	7·0	14·0	555	O	G[c]	FC:PI
873a	*Festuca matthewsii* (Hack.) Cheeseman subsp. *matthewsii*	Yes	Poaceae[j]	M	42	6	P	7,951	8·1	16·3	32·5	528	O	–[w]	FC:PI
874a	*Festuca nigrescens* Lam. subsp. *microphylla* (St-Yves) Markgr.-Dann.	–[m]	Poaceae[j]	M	42[o]	6	P	6,469	6·6	13·2	26·5	555	O	G[c]	FC:PI

874b	*Festuca nigrescens* Lam. subsp. *nigrescens*	–[m]	Poaceae[j]	M	42[o]	6	P	6,509	6·7	13·3	26·6	555	O	G[c]	FC:PI
874c	*Festuca nigrescens* Lam. subsp. *microphylla* (St.-Yves) Markgr.-Dann.	Yes	Poaceae[j]	M	42[z]	6[z]	P	6,748	6·9	13·8	27·6	582	O	G[c]	FC:PI
875a	*Festuca norica* (Hack.) K.Richt.	–[m]	Poaceae[j]	M	14[o]	2	P	3,018	3·1	6·2	12·3	555	O	G[c]	FC:PI
876a	*Festuca novae-zelandiae* (Hack.) Cockayne	Yes	Poaceae[j]	M	42	6	P	8,230	8·4	16·8	33·7	528	O	–[w]	FC:PI
876b	*Festuca novae-zelandiae* (Hack.) Cockayne[i]	Yes	Poaceae[j]	M	42	6	P	4,792	4·9	9·8	19·6	476	O	*Actinidia*[e]	FC:PI
877a	*Festuca ovina* L.	–[m]	Poaceae[j]	M	14[o]	2	P	2,359	2·4	4·8	9·7	555	O	G[c]	FC:PI
878c	*Festuca ovina* L. subsp. *hirtula* (Hackel ex Travis) Wilkinson	No	Poaceae[j]	M	28	4	P	4,455	4·6	9·1	18·2	609	O	*Gallus*[f]	FC:PI
879a	*Festuca pallens* Host	–[m]	Poaceae[j]	M	14	2	P	2,474	2·5	5·1	10·1	555	O	G[c]	FC:PI
880a	*Festuca paniculata* (L.) Schinz & Thell. subsp. *paniculata*	–[m]	Poaceae[j]	M	14[o]	2	P	3,739	3·8	7·6	15·3	555	O	G[c]	FC:PI
881a	*Festuca paniculata* (L.) Schinz & Thell. subsp. *multispiculata* Rivas Ponce & Cebolla	Yes	Poaceae[j]	M	28	4	P	7,345	7·5	15·0	30·0	582	O	G[c]	FC:PI
882a	*Festuca picturata* Pils	–[m]	Poaceae[j]	M	14[o]	2	P	2,841	2·9	5·8	11·6	555	O	G[c]	FC:PI
883a	*Festuca pirinica* Markgr.-Dann.	–[m]	Poaceae[j]	M	14[o]	2	P	2,569	2·6	5·3	10·5	555	O	G[c]	FC:PI
884a	*Festuca polesica* Zapal.	–[m]	Poaceae[j]	M	14[o]	2	P	2,541	2·6	5·2	10·4	555	O	G[c]	FC:PI
884d	*Festuca pratensis* Huds. subsp. *pratensis*	–[m]	Poaceae[j]	M	14[o]	2	P	3,165	3·2	6·5	12·9	555	O	G[c]	FC:PI
885a	*Festuca psammophila* (Čelak.) Fritsch subsp. *dominii* (Krajina) P.Šmarda	–[m]	Poaceae[j]	M	14	2	P	2,405	2·5	4·9	9·8	555	O	G[c]	FC:PI
885b	*Festuca psammophila* (Čelak.) Fritsch subsp. *psammophila*	–[m]	Poaceae[j]	M	14[o]	2	P	2,536	2·6	5·2	10·4	555	O	G[c]	FC:PI
886a	*Festuca pseudodalmatica* Domin	–[m]	Poaceae[j]	M	28[o]	4	P	4,720	4·8	9·7	19·3	555	O	G[c]	FC:PI
887a	*Festuca pseudovaginata* Penksza	–[m]	Poaceae[j]	M	28[o]	4	P	4,812	4·9	9·8	19·7	555	O	G[c]	FC:PI
888a	*Festuca pseudovaria* Hackel ex Wiesb subsp. *winnebachensis* (Wallosek) J.Müller	–[m]	Poaceae[j]	M	42[o]	6	P	9,271	9·5	19·0	37·9	555	O	G[c]	FC:PI
889a	*Festuca pseudovina* Wiesb.	–[m]	Poaceae[j]	M	14[o]	2	P	2,157	2·2	4·4	8·8	555	O	G[c]	FC:PI
889b	*Festuca pseudovina* Hackel ex Wiesb	No	Poaceae[j]	M	14	2	P	2,147	2·2	4·4	8·8	609	O	*Gallus*[f]	FC:PI
890a	*Festuca pumila* Vill.[i]	–[m]	Poaceae[j]	M	14[o]	2	P	3,379	3·5	6·9	13·8	555	O	G[c]	FC:PI
891a	*Festuca riccerii* Foggi & Gr.Rossi	–[m]	Poaceae[j]	M	42[o]	6	P	6,870	7·0	14·1	28·1	555	O	G[c]	FC:PI
892a	*Festuca riloensis* (Hayek) Markgr.-Dann.	–	Poaceae[j]	M	14[o]	2	P	2,773	2·8	5·7	11·3	555	O	G[c]	FC:PI
893a	*Festuca robustifolia* Markgr.-Dann.	–[m]	Poaceae[j]	M	70	10	P	10,900	11·1	22·3	44·6	555	O	G[c]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
894a	*Festuca rothmaleri* (Litard.) Markgr.-Dann	Yes	Poaceae[j]	M	42[z]	6[z]	P	6,680	6·8	13·7	27·3	582	O	G[c]	FC:PI
895c	*Festuca rubra* L. subsp. *rubra*	–[m]	Poaceae[j]	M	42[o]	6	P	6,690	6·8	13·7	27·4	555	O	G[c]	FC:PI
895e	*Festuca rubra* L. subsp. *pruinosa* (Hack.) Piper	Yes	Poaceae[j]	M	42	6	P	6,205	6·3	12·7	25·4	582	O	G[c]	FC:PI
895f	*Festuca rubra* L. subsp. *litoralis* (G.F.W. Meyer) Auquier	Yes	Poaceae[j]	M	42	6	P	6,450	6·6	13·2	26·4	582	O	G[c]	FC:PI
895g	*Festuca rubra* L. var. *littoralis* Vasey	No	Poaceae[j]	M	42	6	P	5,325	5·4	10·9	21·8	609	O	*Gallus*[f]	FC:PI
895h	*Festuca rubra* L. subsp. *fallax* (Thuill.) Nyman	No	Poaceae[j]	M	42	6	P	5,824	6·0	11·9	23·8	609	O	*Gallus*[f]	FC:PI
895s	*Festuca rubra* L. subsp. *pruinosa* (Hack.) Piper	–[m]	Poaceae[j]	M	42	6	P	6,303	6·4	12·9	25·8	555	O	G[c]	FC:PI
896a	*Festuca rubra* L. subsp. *juncea* (Hack.) K.Richt	–[m]	Poaceae[j]	M	56[o]	8	P	8,298	8·5	17·0	33·9	555	O	G[c]	FC:PI
896b	*Festuca rubra* L. subsp. *rubra*	Yes	Poaceae[j]	M	56[z]	8[z]	P	8,636	8·8	17·7	35·3	582	O	G[c]	FC:PI
896c	*Festuca rubra* L. subsp. *rubra*	No	Poaceae[j]	M	56	8	P	6,978	7·1	14·3	28·5	609	O	*Gallus*[f]	FC:PI
897a	*Festuca rupicaprina* (Hack.) A.Kern.[i]	–[m]	Poaceae[j]	M	14[o]	2	P	2,428	2·5	5·0	9·9	555	O	G[c]	FC:PI
898a	*Festuca rupicola* Heuff.	–[m]	Poaceae[j]	M	42[o]	6	P	7,110	7·3	14·5	29·1	555	O	G[c]	FC:PI
899a	*Festuca saxatilis* Schur	–[m]	Poaceae[j]	M	42[o]	6	P	7,022	7·2	14·4	28·7	555	O	G[c]	FC:PI
900a	*Festuca staroplaninica* Velčev[i]	–[m]	Poaceae[j]	M	42[o]	6	P	6,763	6·9	13·8	27·7	555	O	G[c]	FC:PI
901a	*Festuca stenantha* (Hack.) K.Richt.	–[m]	Poaceae[j]	M	14[o]	2	P	2,634	2·7	5·4	10·8	555	O	G[c]	FC:PI
902a	*Festuca stricta* Host subsp. *stricta*	–[m]	Poaceae[j]	M	42[o]	6	P	6,870	7·0	14·1	28·1	555	O	G[c]	FC:PI
903a	*Festuca stricta* Host subsp. *bauzanina* Pils	–[m]	Poaceae[j]	M	56[o]	8	P	9,037	9·2	18·5	37·0	555	O	G[c]	FC:PI
904a	*Festuca summilusitana* Franco & Rocha Afonso	–[m]	Poaceae[j]	M	70	10	P	10,675	10·9	21·8	43·7	555	O	G[c]	FC:PI
904b	*Festuca summilusitana* Franco & Rocha Afonso	Yes	Poaceae[j]	M	70	10	P	11,095	11·3	22·7	45·4	582	O	G[c]	FC:PI
905a	*Festuca summilusitana* Franco & Rocha Afonso	Yes	Poaceae[j]	M	84	12	P	12,553	12·8	25·7	51·3	582	O	G[c]	FC:PI
906a	*Festuca supina* Schur	–[m]	Poaceae[j]	M	28[o]	4	P	4,849	5·0	9·9	19·8	555	O	G[c]	FC:PI
907a	*Festuca tatrae* (Csakó) Degen	–	Poaceae[j]	M	14[o]	2	P	3,422	3·5	7·0	14·0	555	O	G[c]	FC:PI
908a	*Festuca trichophylla*(Gaudin) K.Richt. subsp. *asperifolia* (St.-Yves) Al-Bermani	–[m]	Poaceae[j]	M	42[o]	6	P	6,411	6·6	13·1	26·2	555	O	G[c]	FC:PI

908b	*Festuca trichophylla* (Gaudin) K.Richt. subsp. *trichophylla*	–[m]	Poaceae[j]	M	42[o]	6	P	6,460	6·6	13·2	26·4	555	O	G[c]	FC:PI
909a	*Festuca tristis* Krylov & Ivanitzky	–[m]	Poaceae[j]	M	28[o]	4	P	6,318	6·5	12·9	25·8	555	O	G[c]	FC:PI
910a	*Festuca ultramafica* Connor	Yes	Poaceae[j]	M	56	8	P	10,083	10·3	20·6	41·2	528	O	–[w]	FC:PI
911a	*Festuca vaginata* Willd.	–[m]	Poaceae[j]	M	14[o]	2	P	2,397	2·5	4·9	9·8	555	O	G[c]	FC:PI
912a	*Festuca valesiaca* Gaudin	–[m]	Poaceae[j]	M	14[o]	2	P	2,226	2·3	4·6	9·1	555	O	G[c]	FC:PI
913a	*Festuca valida* (Uechtr.) Penzés subsp. *valida*[i]	–[m]	Poaceae[j]	M	28[o]	4	P	8,817	9·0	18·0	36·1	555	O	G[c]	FC:PI
914a	*Festuca versicolor* Tausch subsp. *pallidula* (Hack.) Markgr.-Dann.	–[m]	Poaceae[j]	M	14[o]	2	P	3,477	3·6	7·1	14·2	555	O	G[c]	FC:PI
914b	*Festuca versicolor* Tausch subsp. *versicolor*	–[m]	Poaceae[j]	M	14[o]	2	P	3,591	3·7	7·3	14·7	555	O	G[c]	FC:PI
914c	*Festuca versicolor* Tausch subsp. *brachystachys* (Hack.) Markg-. Dann	–[m]	Poaceae[j]	M	14[o]	2	P	3,779	3·9	7·7	15·5	555	O	G[c]	FC:PI
915a	*Festuca violacea* subsp. *italica* Foggi, Gr.Rossi & Signorini	–[m]	Poaceae[j]	M	14[o]	2	P	2,511	2·6	5·1	10·3	555	O	G[c]	FC:PI
916a	*Festuca vivipara* (L.) Sm.	–[m]	Poaceae[j]	M	28[o]	4	P	4,852	5·0	9·9	19·8	555	O	G[c]	FC:PI
917a	*Festuca wagneri* (Degen, Thaisz & Flatt) Degen, Thaisz & Flatt	–[m]	Poaceae[j]	M	28[o]	4	P	4,643	4·7	9·5	19·0	555	O	G[c]	FC:PI
918a	*Festuca xanthina* Roem. & Schult.	–[m]	Poaceae[j]	M	14[o]	2	P	3,902	4·0	8·0	16·0	555	O	G[c]	FC:PI
919a	*Fibigia clypeata* Medik.	Yes	Brassicaceae[j]	E	16	2	–[q]	1,223	1·3	2·5	5·0	599	O	L	FC:PI
920a	*Fibigia eriocarpa* Boiss.	Yes	Brassicaceae[j]	E	16	2	–[q]	1,262	1·3	2·6	5·2	599	O	L	FC:PI
921a	*Ficus carica* L.	No	Moraceae	E	–[n]	–[p]	P	357	0·4	0·7	1·5	563	O	*Solan.*[e]	FC:PI
922a	*Filifolium sibiricum* (L.) Kitam.	Yes	Asteraceae[j]	E	18	2	P	4,616	4·7	9·4	18·9	521	O	*Petunia*[e]	FC:PI
923a	*Forsskaolea angustifolia* Retz.	–[m]	Urticaceae	E	22[o]	2	P	313	0·3	0·6	1·3	477	O	*Raphanus*[e]	FC:PI
924a	*Fosterella penduliflora* (C.H.Wright) L.B.Sm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	910	0·9	1·9	3·7	575	O	*Raphanus*[e]	FC:PI
925a	*Fosterella villosula* (Harms) L.B.Sm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	910	0·9	1·9	3·7	575	O	*Raphanus*[e]	FC:PI
926a	*Frangula alnus* Miller	Yes	Rhamnaceae	E	–[n]	–[p]	P	528	0·5	1·1	2·2	489	O	–[w]	FC:EB
927a	*Frankenia* sp.	Yes	Frankeniaceae	E	c. 28	–[p]	–[q]	313	0·3	0·6	1·3	612	O	J	Fe
928a	*Fraxinus angustifolia* Vahl[i]	Yes	Oleaceae	E	–[n]	–[p]	P	870	0·9	1·8	3·6	489	O	–[w]	FC:EB
929a	*Fritillaria acmopetala* Boiss.	No	Liliaceae	M	24[o]	2	P	64,793	66·3	132·5	265·0	616	O	*Haem.*[e]	FC:PI
930a	*Fritillaria affinis* (Schult.) Sealy	Yes	Liliaceae	M	c. 24	2	P	44,621	45·6	91·3	182·5	565	O	B	Fe
931a	*Fritillaria alfredae* Post subsp. *glaucoviridis*	Yes	Liliaceae	M	c. 24	2	P	55,844	57·1	114·2	228·4	565	O	B	Fe
932a	*Fritillaria assyriaca* Baker subsp. *melananthera*	Yes	Liliaceae	M	c. 24	2	P	52,225	53·4	106·8	213·6	565	O	B	Fe
932b	*Fritillaria assyriaca*[l]	No	Liliaceae	M	24[o]	2	P	65,526	67·0	134·0	268·0	616	O	*Haem.*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
933a	*Fritillaria assyriaca* Baker	Yes	Liliaceae	M	c. 36	3	P	–[t]	–[t]	155·1	310·2	565	O	B	Fe
934a	*Fritillaria camschatcensis* (L.) Ker Gawl.	Yes	Liliaceae	M	c. 36	3	P	–[t]	–[t]	112·3	224·5	565	O	B	Fe
934b	*Fritillaria camschatcensis* (L.) Ker Gawl.	No	Liliaceae	M	36	3	P	–[t]	–[t]	101·6	203·3	570	O	A[c]	FC:PI
935a	*Fritillaria crassifolia* Boiss. & Huet	No	Liliaceae	M	24[o]	2	P	65,086	66·6	133·1	266·2	616	O	*Haem.*[e]	FC:PI
936a	*Fritillaria davidii* Franch.	Yes	Liliaceae	M	c. 24	2	P	30,440	31·1	62·3	124·5	565	O	B	Fe
937a	*Fritillaria davisii* Turrill	No	Liliaceae	M	24[o]	2	P	67,922	69·5	138·9	277·8	616	O	*Haem.*[e]	FC:PI
938a	*Fritillaria eastwoodiae* Macfarl.	Yes	Liliaceae	M	20-24	2	P	47,555	48·6	97·3	194·5	565	O	B	Fe
939a	*Fritillaria elwesii* Bossi.	No	Liliaceae	M	–[n]	–[p]	P	101,370	103·7	207·3	414·6	616	O	*Haem.*[e]	FC:PI
940a	*Fritillaria gibbosa* Boiss.	Yes	Liliaceae	M	c. 24	2	P	41,516	42·5	84·9	169·8	565	O	B	Fe
941a	*Fritillaria glauca* Greene	Yes	Liliaceae	M	c. 26	2	P	47,800	48·9	97·8	195·5	565	O	B	Fe
941c	*Fritillaria glauca* Greene	No	Liliaceae	M	24[o]	2	P	54,621	55·9	111·7	223·4	616	O	*Haem.*[e]	FC:PI
942a	*Fritillaria gussichae* (Degen & Dorfl.) Rix	Yes	Liliaceae	M	24	2	P	48,362	49·5	98·9	197·8	565	O	B	Fe
943a	*Fritillaria imperialis* L.	Yes	Liliaceae	M	24	2	P	42,005	43·0	85·9	171·8	565	O	B	Fe
943b	*Fritillaria imperialis* L. cv. Maxima Lutea	Yes	Liliaceae	M	24 + 4B	2	P	46,333	47·4	94·8	189·5	565	O	B	Fe
943c	*Fritillaria imperialis* L.	No	Liliaceae	M	24[o]	2	P	50,123	51·3	102·5	205·0	616	O	*Haem.*[e]	FC:PI
943d	*Fritillaria imperialis* L. cv. Maxima	No	Liliaceae	M	–[n]	–[p]	P	97,898	100·1	200·2	400·4	616	O	*Haem.*[e]	FC:PI
944a	*Fritillaria koidzumiana* Ohwi	Yes	Liliaceae	M	24	2	P	75,673	77·4	154·8	309·5	565	O	B	Fe
945a	*Fritillaria liliacea* Lindl.	No	Liliaceae	M	24[o]	2	P	43,814	44·8	89·6	179·2	616	O	*Haem.*[e]	FC:PI
946a	*Fritillaria maximowiczii* Freyn	Yes	Liliaceae	M	c. 20-24	2	P	30,074	30·8	61·5	123·0	565	O	B	Fe
947a	*Fritillaria meleagris* L.	Yes	Liliaceae	M	24	2	P	46,259	47·3	94·6	189·2	565	O	B	Fe
947c	*Fritillaria meleagris* L.	No	Liliaceae	M	24[o]	2	P	54,964	56·2	112·4	224·8	616	O	*Haem.*[e]	FC:PI
948a	*Fritillaria olivieri* Baker	No	Liliaceae	M	24[o]	2	P	57,262	58·6	117·1	234·2	616	O	*Haem.*[e]	FC:PI
949a	*Fritillaria pallidiflora* Schrenk	No	Liliaceae	M	24[o]	2	P	42,739	43·7	87·4	174·8	616	O	*Haem.*[e]	FC:PI
950a	*Fritillaria persica* cv. Adiyaman L.	Yes	Liliaceae	M	24	2	P	38,998	39·9	79·8	159·5	565	O	B	Fe
951a	*Fritillaria pinardii* Boiss.	No	Liliaceae	M	24[o]	2	P	64,108	65·6	131·1	262·2	616	O	*Haem.*[e]	FC:PI
952a	*Fritillaria pudica* (Pursch) Spreng.	Yes	Liliaceae	M	c. 36	3	P	–[t]	–[t]	132·8	265·5	565	O	B	Fe
953a	*Fritillaria pyrenaica* L.	Yes	Liliaceae	M	c. 24	2	P	39,267	40·2	80·3	160·6	565	O	B	Fe
953c	*Fritillaria pyrenaica* L.	No	Liliaceae	M	24[o]	2	P	51,296	52·5	104·9	209·8	616	O	*Haem.*[e]	FC:PI
954a	*Fritillaria raddeana* Regel	No	Liliaceae	M	24[o]	2	P	44,548	45·6	91·1	182·2	616	O	*Haem.*[e]	FC:PI
955a	*Fritillaria rhodocanakis* Orph.	No	Liliaceae	M	24[o]	2	P	65,966	67·5	134·9	269·8	616	O	*Haem.*[e]	FC:PI
956a	*Fritillaria ruthenica* Wikst.	Yes	Liliaceae	M	c. 24	2	P	49,976	51·1	102·2	204·4	565	O	B	Fe

957a	*Fritillaria sewerzowii* (Regel) Regel	Yes	Liliaceae	M	c. 24	2	P	41,394	42·3	84·7	169·3	565	O	B	Fe
958a	*Fritillaria thunbergii* Miq.	Yes	Liliaceae	M	24	2	P	38,020	38·9	77·8	155·5	565	O	B	Fe
959a	*Fritillaria tubiformis* Gren. & Godr.	Yes	Liliaceae	M	c. 24	2	P	41,321	42·3	84·5	169·0	565	O	B	Fe
960a	*Fritillaria tuntasia* Heldr. ex Halácsy	Yes	Liliaceae	M	c. 24	2	P	51,321	52·5	105·0	209·9	565	O	B	Fe
960c	*Fritillaria tuntasia* Heldr. ex Halácsy	No	Liliaceae	M	24[o]	2	P	63,766	65·2	130·4	260·8	616	O	*Haem.*[e]	FC:PI
961a	*Fritillaria uva-vulpis* Rix	Yes	Liliaceae	M	36	3	P	–[t]	–[t]	178·4	356·8	565	O	B	Fe
961b	*Fritillaria uva-vulpis* Rix	No	Liliaceae	M	–[n]	–[p]	P	81,076	82·9	165·8	331·6	492	O	B[c]	FC:PI
961c	*Fritillaria uva-vulpis* Rix	No	Liliaceae	M	48[o]	4	P	99,707	102·0	203·9	407·8	616	O	*Haem.*[e]	FC:PI
962a	*Fritillaria verticillata* Willd. var. *thunbergii*	No	Liliaceae	M	24	2	P	35,827	36·6	73·3	146·5	570	O	A[c]	FC:PI
962b	*Fritillaria verticillata* Willd.	No	Liliaceae	M	24[o]	2	P	41,516	42·5	84·9	169·8	616	O	*Haem.*[e]	FC:PI
963b	*Furcraea selloa* K.Koch	No	Asparagaceae[k]	M	60[o]	–[p]	P	3,716	3·8	7·6	15·2	482	O	*Agave* sp.[e]	FC:PI
964a	*Gagea wilczekii* Braun-Blanquet & Maire	Yes	Liliaceae	M	–[n]	–[p]	P	8,484	8·7	17·4	34·7	565	O	G	FC:PI
965a	*Galanthus alpinus* Sosnowsky subsp. *alpinus*[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	30,416	31·1	62·2	124·4	484	O	*Clivia*[e]	FC:PI
966a	*Galanthus alpinus* Sosnowsky subsp. *bortkewitschianus*[i]	Yes	Amaryllidaceae[k]	M	36[o]	3[z]	P	–[t]	–[t]	92·6	185·2	484	O	*Clivia*[e]	FC:PI
967a	*Galanthus cilicicus* Baker[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	32,127	32·9	65·7	131·4	484	O	*Clivia*[e]	FC:PI
968a	*Galanthus elwesii* Hook.f.[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	27,042	27·7	55·3	110·6	484	O	*Clivia*[e]	FC:PI
968b	*Galanthus elwesii* Hook.f. var. *monostictus*[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	28,900	29·6	59·1	118·2	484	O	*Clivia*[e]	FC:PI
969a	*Galanthus elwesii* Hook.f.[i]	Yes	Amaryllidaceae[k]	M	48[o]	4[z]	P	52,127	53·3	106·6	213·2	484	O	*Clivia*[e]	FC:PI
969b	*Galanthus elwesii* Hook.f. var. *monostictus?*	Yes	Amaryllidaceae[k]	M	48[o]	4[z]	P	60,098	61·5	122·9	245·8	484	O	*Clivia*[e]	FC:PI
970a	*Galanthus elwesii* Hook.f.	Yes	Amaryllidaceae[k]	M	72[o]	6[z]	P	76,969	78·7	157·4	314·8	484	O	*Clivia*[e]	FC:PI
971a	*Galanthus fosteri* Baker[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	26,895	27·5	55·0	110·0	484	O	*Clivia*[e]	FC:PI
972a	*Galanthus gracilis* Čelak[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	26,748	27·4	54·7	109·4	484	O	*Clivia*[e]	FC:PI
973a	*Galanthus ikariae* Baker[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	33,594	34·4	68·7	137·4	484	O	*Clivia*[e]	FC:PI
974a	*Galanthus koenenianus* Lobin, Brickell & A.P.Davis[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	27,971	28·6	57·2	114·4	484	O	*Clivia*[e]	FC:PI
975a	*Galanthus krasnovii* A.P.Khokhr.[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	44,157	45·2	90·3	180·6	484	O	*Clivia*[e]	FC:PI
976a	*Galanthus lagodechianus* Kem.-Nath.[i]	Yes	Amaryllidaceae[k]	M	72[o]	6[z]	P	80,343	82·2	164·3	328·6	484	O	*Clivia*[e]	FC:PI
977a	*Galanthus nivalis* L.[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	35,306	36·1	72·2	144·4	484	O	*Clivia*[e]	FC:PI
978a	*Galanthus nivalis* L.	Yes	Amaryllidaceae[k]	M	36[o]	3[z]	P	–[t]	–[t]	105·3	210·6	484	O	*Clivia*[e]	FC:PI
979a	*Galanthus peshmenii* A.P.Davis & Brickell	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	27,580	28·2	56·4	112·8	484	O	*Clivia*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
980a	*Galanthus platyphyllus* Traub & Moldenke[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	44,206	45·2	90·4	180·8	484	O	*Clivia*[e]	FC:PI
981a	*Galanthus plicatus* M.Bieb.[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	27,091	27·7	55·4	110·8	484	O	*Clivia*[e]	FC:PI
981b	*Galanthus plicatus* M.Bieb. subsp. *byzantinus*[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	28,313	29·0	57·9	115·8	484	O	*Clivia*[e]	FC:PI
982a	*Galanthus reginae-olgae* Orph. subsp. *vernalis*[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	34,279	35·1	70·1	140·2	484	O	*Clivia*[e]	FC:PI
982b	*Galanthus reginae-olgae* Orph.[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	37,457	38·3	76·6	153·2	484	O	*Clivia*[e]	FC:PI
982c	*Galanthus reginae-olgae* Orph. subsp. *reginae-olgae*	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	37,457	38·3	76·6	153·2	484	O	*Clivia*[e]	FC:PI
982d	*Galanthus reginae-olgae* Orph. subsp. *vernalis*[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	39,218	40·1	80·2	160·4	484	O	*Clivia*[e]	FC:PI
983a	*Galanthus rizehensis* Stern	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	23,717	24·3	48·5	97·0	484	O	*Clivia*[e]	FC:PI
984a	*Galanthus rizehensis* Stern[i]	Yes	Amaryllidaceae[k]	M	36[o]	3[z]	P	–[t]	–[t]	72·9	145·8	484	O	*Clivia*[e]	FC:PI
985a	*Galanthus transcaucasicus* Fomin[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	40,049	41·0	81·9	163·8	484	O	*Clivia*[e]	FC:PI
986a	*Galanthus transcaucasicus* Fomin	Yes	Amaryllidaceae[k]	M	48[o]	4[z]	P	78,827	80·6	161·2	322·4	484	O	*Clivia*[e]	FC:PI
987a	*Galanthus trojanus* A.P.Davis & Özhatay	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	27,824	28·5	56·9	113·8	484	O	*Clivia*[e]	FC:PI
988a	*Galanthus woronowii* Losinsk.[i]	Yes	Amaryllidaceae[k]	M	24[o]	2[z]	P	27,531	28·2	56·3	112·6	484	O	*Clivia*[e]	FC:PI
989a	*Gasteria acinacifolia* (Jacq.) Haw.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	18,924	19·4	38·7	77·4	473	O	*Agave* sp.[e]	FC:PI
990a	*Gasteria acinacifolia* (Jacq.) Haw. cv. Grandiflora	Yes	Xanthorrhoeaceae[k]	M	28[z]	4[z]	P	37,457	38·3	76·6	153·2	473	O	*Agave* sp.[e]	FC:PI
991a	*Gasteria batesiana* Rowley var. *dolomitica*	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	21,076	21·6	43·1	86·2	473	O	*Agave* sp.[e]	FC:PI
991b	*Gasteria batesiana* Rowley[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	21,516	22·0	44·0	88·0	473	O	*Agave* sp.[e]	FC:PI
992a	*Gasteria baylissiana* Rauh[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,653	18·1	36·1	72·2	473	O	*Agave* sp.[e]	FC:PI
993a	*Gasteria bicolor* Haw. var. *bicolor*[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,604	18·0	36·0	72·0	473	O	*Agave* sp.[e]	FC:PI
993b	*Gasteria bicolor* Haw. var. *liliputana*[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,653	18·1	36·1	72·2	473	O	*Agave* sp.[e]	FC:PI
994a	*Gasteria brachyphylla* (Salm-Dyck) van Jaarsv. var. *bayeri*	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,213	17·6	35·2	70·4	473	O	*Agave* sp.[e]	FC:PI
994b	*Gasteria brachyphylla* (Salm-Dyck) van Jaarsv.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,653	18·1	36·1	72·2	473	O	*Agave* sp.[e]	FC:PI

995a	*Gasteria carinata* Duval var. *glabra*[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	18,680	19·1	38·2	76·4	473	O	*Agave* sp.[e]	FC:PI
995b	*Gasteria carinata* Duval var. *thunbergii*[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	19,120	19·6	39·1	78·2	473	O	*Agave* sp.[e]	FC:PI
995c	*Gasteria carinata* Duval var. *verrucosa*[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	19,511	20·0	39·9	79·8	473	O	*Agave* sp.[e]	FC:PI
995d	*Gasteria carinata* Duval var. *retusa*[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	19,511	20·0	39·9	79·8	473	O	*Agave* sp.[e]	FC:PI
995e	*Gasteria carinata* Duval var. *carinata*	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	19,756	20·2	40·4	80·8	473	O	*Agave* sp.[e]	FC:PI
996a	*Gasteria croucheri* (Hook.f.) Bak.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	18,924	19·4	38·7	77·4	473	O	*Agave* sp.[e]	FC:PI
997a	*Gasteria disticha* (L.) Haw.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,457	17·9	35·7	71·4	473	O	*Agave* sp.[e]	FC:PI
998a	*Gasteria ellaphieae* van Jaarsv.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,164	17·6	35·1	70·2	473	O	*Agave* sp.[e]	FC:PI
999a	*Gasteria excelsa* Bak.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	18,289	18·7	37·4	74·8	473	O	*Agave* sp.[e]	FC:PI
1000a	*Gasteria excelsa* Bak.	Yes	Xanthorrhoeaceae[k]	M	28[o]	4	P	35,208	36·0	72·0	144·0	473	O	*Agave* sp.[e]	FC:PI
1001a	*Gasteria glauca* van Jaarsv.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,360	17·8	35·5	71·0	473	O	*Agave* sp.[e]	FC:PI
1002a	*Gasteria glomerata* van Jaarsv.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,360	17·8	35·5	71·0	473	O	*Agave* sp.[e]	FC:PI
1003a	*Gasteria nitida* (Salm-Dyck) Haw. var. *armstrongii*[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,213	17·6	35·2	70·4	473	O	*Agave* sp.[e]	FC:PI
1003b	*Gasteria nitida* (Salm-Dyck) Haw.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,408	17·8	35·6	71·2	473	O	*Agave* sp.[e]	FC:PI
1004a	*Gasteria pendulifolia* van Jaarsv.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	18,875	19·3	38·6	77·2	473	O	*Agave* sp.[e]	FC:PI
1005a	*Gasteria pillansii* Kensit var. *pillansii*[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,897	18·3	36·6	73·2	473	O	*Agave* sp.[e]	FC:PI
1005b	*Gasteria pillansii* Kensit var. *ernesti-ruschii*[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	18,093	18·5	37·0	74·0	473	O	*Agave* sp.[e]	FC:PI
1006a	*Gasteria polita* van Jaarsv.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,311	17·7	35·4	70·8	473	O	*Agave* sp.[e]	FC:PI
1007b	*Gasteria pulchra* (Ait.) Haw.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,115	17·5	35·0	70·0	473	O	*Agave* sp.[e]	FC:PI
1008a	*Gasteria rawlinsonii* Oberm.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	16,430	16·8	33·6	67·2	473	O	*Agave* sp.[e]	FC:PI
1009a	*Gasteria vlokii* van Jaarsv.[i]	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,311	17·7	35·4	70·8	473	O	*Agave* sp.[e]	FC:PI
1010a	*Genista benehoavensis* (Bolle ex Svent.) del Arco	–[m]	Fabaceae[j]	E	c. 48[o]	4	P	2,249	2·3	4·6	9·2	552	O	H[c]	FC:PI
1011a	*Genlisea aurea* A.St.-Hil.	Yes	Lentibulariaceae	E	c. 52	–[p]	P	63	0·1	0·1	0·3	535	O	G[c]	CIA
1012a	*Genlisea hispidula* Stapf	Yes	Lentibulariaceae	E	–[n]	–[p]	P	1,510	1·5	3·1	6·2	535	O	G[c]	CIA
1013a	*Genlisea lobata* Fromm	Yes	Lentibulariaceae	E	16	–[p]	P	1,277	1·3	2·6	5·2	535	O	G[c]	CIA
1014a	*Genlisea margaretae* Hutch.	Yes	Lentibulariaceae	E	c. 40	–[p]	P	63	0·1	0·1	0·3	535	O	G[c]	CIA
1015a	*Genlisea uncinata* P.Taylor & E.Fromm-Trinta	Yes	Lentibulariaceae	E	–[n]	–[p]	P	995	1·0	2·0	4·1	535	O	G[c]	CIA
1016a	*Genlisea violacea* A.St.-Hil.	Yes	Lentibulariaceae	E	–[n]	–[p]	P	1,005	1·0	2·1	4·1	535	O	G[c]	CIA

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
1017a	*Gentiana cruciata* L.	–[m]	Gentianaceae	E	–[n]	–[p]	–[q]	4,328	4·4	8·9	17·7	488	O	*Petunia*[e]	FC:PI
1018a	*Gentiana tibetica* King ex Hook.f.	–[m]	Gentianaceae	E	–[n]	–[p]	P	3,643	3·7	7·5	14·9	488	O	*Petunia*[e]	FC:PI
1019a	*Gesnouinia arborea* (L.f.) Gaud.	–[m]	Urticaceae	E	20[o]	2	P	499	0·5	1·0	2·0	477	O	*Solan.*[e]	FC:PI
1020a	*Gillenia stipulata* (Willd.) Nutt.	Yes	Rosaceae	E	–[n]	–[p]	P	494	0·5	1·0	2·0	527	O	G[c]	FC:PI
1021a	*Gillenia trifoliata* (L.) Moench	Yes	Rosaceae	E	–[n]	2[z]	P	406	0·4	0·8	1·7	527	O	G[c]	FC:PI
1022a	*Globularia salicina* Lam.	–[m]	Plantaginaceae	E	16	2	P	411	0·4	0·8	1·7	552	O	*Raphanus*[e]	FC:PI
1023n	*Glycine max* (L.) Merr.	Yes	Fabaceae[j]	E	–[n]	–[p]	A	1,335	1·4	2·7	5·5	492	O	G[c]	FC:PI
1024a	*Gnidia polystachya* P.J.Bergius	No	Thymelaeaceae	E	18	–[p]	P	824	0·8	1·7	3·4	612	O	J	Fe
1025a	*Gomesa flexuosa*[l]	Yes	Orchidaceae	M	–[n]	–[p]	P	1,076	1·1	2·2	4·4	504[ah]	O	–[w]	FC:DAPI
1026a	*Gonospermum canariense* Less.	–[m]	Asteraceae[j]	E	18[o]	2	P	5,980	6·1	12·2	24·5	552	O	G[c]	FC:PI
1027a	*Gonospermum fruticosum* (Buch) Less.	–[m]	Asteraceae[j]	E	18[o]	2	P	6,015	6·2	12·3	24·6	552	O	G[c]	FC:PI
1028a	*Gossypium anomalum* Wawra	No	Malvaceae	E	26[o]	2	P	1,359	1·4	2·8	5·6	471	O	–[v]	FC:PI
1029a	*Gossypium arboreum* L.[h]	No	Malvaceae	E	26[o]	2	P	1,677	1·7	3·4	6·9	471	O	–[v]	FC:PI
1029b	*Gossypium arboreum* L.[h]	No	Malvaceae	E	26[o]	2	P	1,746	1·8	3·6	7·1	471	O	–[v]	FC:PI
1030a	*Gossypium areysianum* Deflers.	No	Malvaceae	E	26[o]	2	P	1,663	1·7	3·4	6·8	471	O	–[v]	FC:PI
1031a	*Gossypium aridum* (Rose & Standl.) Skovst.	No	Malvaceae	E	26[o]	2	P	919	0·9	1·9	3·8	471	O	–[v]	FC:PI
1032a	*Gossypium armourianum* Kearney	No	Malvaceae	E	26[o]	2	P	856	0·9	1·8	3·5	471	O	–[v]	FC:PI
1033a	*Gossypium australe* F.Muell.	No	Malvaceae	E	26[o]	2	P	1,834	1·9	3·8	7·5	471	O	–[v]	FC:PI
1034a	*Gossypium barbadense* L.	No	Malvaceae	E	26[o]	2	P	2,450	2·5	5·0	10·0	471	O	–[v]	FC:PI
1035a	*Gossypium bickii* Prokh.	No	Malvaceae	E	26[o]	2	P	1,756	1·8	3·6	7·2	471	O	–[v]	FC:PI
1036a	*Gossypium capits-virdis* Mauer	No	Malvaceae	E	26[o]	2	P	1,345	1·4	2·8	5·5	471	O	–[v]	FC:PI
1037a	*Gossypium cunninghamii* Tod.	No	Malvaceae	E	26[o]	2	P	2,499	2·6	5·1	10·2	471	O	–[v]	FC:PI
1038a	*Gossypium darwinii* G.Watt	No	Malvaceae	E	26[o]	2	P	2,362	2·4	4·8	9·7	471	O	–[v]	FC:PI
1039a	*Gossypium davidsonii* Kellogg.	No	Malvaceae	E	26[o]	2	P	910	0·9	1·9	3·7	471	O	–[v]	FC:PI
1040a	*Gossypium enthyle* Fryxell *et al.*	No	Malvaceae	E	26[o]	2	P	2,572	2·6	5·3	10·5	471	O	–[v]	FC:PI
1041a	*Gossypium exiguum* Fryxell *et al.*	No	Malvaceae	E	26[o]	2	P	2,460	2·5	5·0	10·1	471	O	–[v]	FC:PI
1042a	*Gossypium gossypioides* (Ulbr.) Standl.	No	Malvaceae	E	26[o]	2	P	841	0·9	1·7	3·4	471	O	–[v]	FC:PI
1043a	*Gossypium harknessii* Brandegee	No	Malvaceae	E	26[o]	2	P	910	0·9	1·9	3·7	471	O	–[v]	FC:PI

1044a	*Gossypium herbaceum* J.Hutch ex S.C.Harland. subsp. *africanum*	No	Malvaceae	E	26°	2	P	1,667	1·7	3·4	6·8	471	O	–[v]	FC:PI
1045a	*Gossypium hirsutum* L.[h]	No	Malvaceae	E	52°	4	P	2,347	2·4	4·8	9·6	471	O	–[v]	FC:PI
1045b	*Gossypium hirsutum* L.[h]	No	Malvaceae	E	52°	4	P	2,489	2·5	5·1	10·2	471	O	–[v]	FC:PI
1046a	*Gossypium klotzschianum* Andersson	No	Malvaceae	E	26°	2	P	880	0·9	1·8	3·6	471	O	–[v]	FC:PI
1047a	*Gossypium laxum* L.L.Phillips	No	Malvaceae	E	26°	2	P	934	1·0	1·9	3·8	471	O	–[v]	FC:PI
1048a	*Gossypium lobatum* Gentry	No	Malvaceae	E	26°	2	P	934	1·0	1·9	3·8	471	O	–[v]	FC:PI
1049a	*Gossypium longicalyx* J.B.Hutch & B.J.S.Lee	No	Malvaceae	E	26°	2	P	1,311	1·3	2·7	5·4	471	O	–[v]	FC:PI
1050a	*Gossypium marchantii* Fryxell *et al.*	No	Malvaceae	E	26°	2	P	2,616	2·7	5·4	10·7	471	O	–[v]	FC:PI
1051a	*Gossypium mustelinum* Miers ex G.Watt	No	Malvaceae	E	26°	2	P	2,372	2·4	4·9	9·7	471	O	–[v]	FC:PI
1052a	*Gossypium nelsonii* Fryxell.	No	Malvaceae	E	26°	2	P	1,756	1·8	3·6	7·2	471	O	–[v]	FC:PI
1053a	*Gossypium nobile* Fryxell *et al.*	No	Malvaceae	E	26°	2	P	2,778	2·8	5·7	11·4	471	O	–[v]	FC:PI
1054a	*Gossypium pilosum* Fryxell	No	Malvaceae	E	26°	2	P	2,494	2·6	5·1	10·2	471	O	–[v]	FC:PI
1055a	*Gossypium raimondii* Ulbr.	No	Malvaceae	E	26°	2	P	880	0·9	1·8	3·6	471	O	–[v]	Fe & FC:PI
1056a	*Gossypium robinsonii* F.Muell.	No	Malvaceae	E	26°	2	P	1,951	2·0	4·0	8·0	471	O	–[v]	FC:PI
1057a	*Gossypium rotundifolium* Fryxell *et al.*[h]	No	Malvaceae	E	26°	2	P	2,450	2·5	5·0	10·0	471	O	–[v]	FC:PI
1057b	*Gossypium rotundifolium* Fryxell *et al.*[h]	No	Malvaceae	E	26°	2	P	2,479	2·5	5·1	10·1	471	O	–[v]	FC:PI
1058a	*Gossypium somalense* (Gürke) J.B.Hutch.	No	Malvaceae	E	26°	2	P	1,496	1·5	3·1	6·1	471	O	–[v]	FC:PI
1059a	*Gossypium stocksii* M.Mast.	No	Malvaceae	E	26°	2	P	1,531	1·6	3·1	6·3	471	O	–[v]	FC:PI
1060a	*Gossypium sturtianum* J.H.Willis.	No	Malvaceae	E	26°	2	P	2,015	2·1	4·1	8·2	471	O	–[v]	FC:PI
1061a	*Gossypium thurberi* Tod.	No	Malvaceae	E	26°	2	P	841	0·9	1·7	3·4	471	O	–[v]	FC:PI
1062a	*Gossypium tomentosum* Nutt. ex Seem.	No	Malvaceae	E	26°	2	P	2,381	2·4	4·9	9·7	471	O	–[v]	FC:PI
1063a	*Gossypium trilobum* (DC.) Skovst.	No	Malvaceae	E	26°	2	P	851	0·9	1·7	3·5	471	O	–[v]	FC:PI
1064a	*Gossypium turneri* Fryxell	No	Malvaceae	E	26°	2	P	910	0·9	1·9	3·7	471	O	–[v]	FC:PI
1065a	*Greenovia aizoon* Bolle	–[m]	Crassulaceae	E	36°	4	P	479	0·5	1·0	2·0	552	O	*Solan.*[e]	FC:PI
1066a	*Greenovia dodrendalis* (Willd.) Webb & Berthel.	–[m]	Crassulaceae	E	36°	4	P	455	0·5	0·9	1·9	552	O	*Solan.*[e]	FC:PI
1067a	*Guaiacum officinale* L.	No	Zygophyllaceae	E	–[n]	–[p]	P	460	0·5	0·9	1·9	501[ag]	O	B[c]	Fe
1068a	*Guillenia lasiophyllum* (Hook. & Arn.) Greene	–[m]	Brassicaceae[j]	E	28°	–[p]	A	376	0·4	0·8	1·5	509	O	–[w]	FC:PI
1069a	*Haemanthus albiflos* Jacq.	No	Amaryllidaceae	M	32°	–[p]	P	37,164	38·0	76·0	152·0	616	O	*Agave* sp.[e]	FC:PI
1070a	*Hakea dactyloides* Car.	–[m]	Proteaceae	E	–[n]	–[p]	P	944	1·0	1·9	3·9	526	O	A	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
1071a	*Hakea tephrosperma* R.Br.	–[m]	Proteaceae	E	–[n]	–[p]	–[q]	924	0·9	1·9	3·8	526	O	A	FC:PI
1072a	*Hakea teretifolia* Britten	–[m]	Proteaceae	E	–[n]	–[p]	–[q]	910	0·9	1·9	3·7	526	O	A	FC:PI
1073a	*Halimium atriplicifolium* (Lam.) Spach	Yes	Cistaceae	E	18	2	P	1,790	1·8	3·7	7·3	567	O	*Solan.*[e]	FC:PI
1074a	*Halimium calycinum* (L.) K. Koch	Yes	Cistaceae	E	18	2	P	3,721	3·8	7·6	15·2	567	O	*Solan.*[e]	FC:PI
1075a	*Halimium halimifolium* (L.) Willk. subsp. *multiflorum* (Salzm. Ex Dunal) Maire	Yes	Cistaceae	E	18	2	P	2,303	2·4	4·7	9·4	567	O	*Solan.*[e]	FC:PI
1076a	*Halimium lasianthum* (Lam.) Spach subsp. *alyssoides* (Lam.) Greuter	Yes	Cistaceae	E	18	2	P	3,051	3·1	6·2	12·5	567	O	*Solan.*[e]	FC:PI
1077a	*Halimium ocymoides* (Lam.) Willk.	Yes	Cistaceae	E	18	2	P	2,699	2·8	5·5	11·0	567	O	*Solan.*[e]	FC:PI
1078a	*Halimium umbellatum* (L.) Spach subsp. *viscosum*	Yes	Cistaceae	E	18	2	P	1,868	1·9	3·8	7·6	567	O	*Solan.*[e]	FC:PI
1078b	*Halimium umbellatum* (L.) Spach subsp. *umbellatum*	Yes	Cistaceae	E	18	2	P	1,897	1·9	3·9	7·8	567	O	*Solan.*[e]	FC:PI
1079a	*Hamamelis virginiana* L.	No	Hamamelidaceae	E	24	–[p]	P	572	0·6	1·2	2·3	612	O	J	Fe
1080e	*Haplopappus gracilis* (Nutt.) A.Gray	Yes	Asteraceae[j]	E	–[n]	–[p]	A	1,169	1·2	2·4	4·8	492	O	*Glycine*[e]	FC:PI
1081a	*Hechtia epigyna* Harms	Yes	Bromeliaceae	M	50	2	P	469	0·5	1·0	1·9	575	O	*Raphanus*[e]	FC:PI
1082a	*Hechtia matudae* L.B.Sm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	460	0·5	0·9	1·9	575	O	*Raphanus*[e]	FC:PI
1083a	*Hedinia tibetica* (Thomson) Ostenf.	Yes	Brassicaceae[j]	E	24	–[p]	–[q]	450	0·5	0·9	1·8	599	O	L	FC:PI
1084s	*Helianthus annuus* L.[i]	No	Asteraceae[j]	E	34[o]	2	A	3,619	3·7	7·4	14·8	485	O	F	FC:PI
1085b	*Helianthus anomalus* Blake[i]	No	Asteraceae[j]	E	34[o]	2	A	5,633	5·8	11·5	23·0	485	O	F	FC:PI
1086b	*Helianthus deserticola* Heiser[h]	No	Asteraceae[j]	E	34[o]	2	A	4,856	5·0	9·9	19·9	485	O	F	FC:PI
1086c	*Helianthus deserticola* Heiser[h]	No	Asteraceae[j]	E	34[o]	2	A	5,516	5·6	11·3	22·6	485	O	F	FC:PI
1087b	*Helianthus paradoxus* Heiser[i]	No	Asteraceae[j]	E	34[o]	2	A	5,355	5·5	11·0	21·9	485	O	F	FC:PI
1088c	*Helianthus petiolaris* Nutt. subsp. *fallax*[i]	No	Asteraceae[j]	E	34[o]	2	A	3,330	3·4	6·8	13·6	485	O	F	FC:PI
1088d	*Helianthus petiolaris* Nutt. subsp. *petiolaris*[i]	No	Asteraceae[j]	E	34[o]	2	A	3,364	3·4	6·9	13·8	485	O	F	FC:PI
1089a	*Heliophila amplexicaulis* L.f.	Yes	Brassicaceae[j]	E	20-22	–[p]	–[q]	372	0·4	0·8	1·5	599	O	L	FC:PI
1090a	*Heliophila coronopifolia* L.	Yes	Brassicaceae[j]	E	20	–[p]	–[q]	421	0·4	0·9	1·7	599	O	L	FC:PI
1091a	*Hepatica acutiloba* DC.	No	Ranunculaceae	E	14[o]	2	P	19,707	20·2	40·3	80·6	495	O	F	FC:PI

1092a	*Hepatica americana* (DC.) Ker Gawl.	No	Ranunculaceae	E	14[o]	2	P	19,658	20·1	40·2	80·4	495	O	F	FC:PI
1093a	*Hepatica asiatica* Nakai	No	Ranunculaceae	E	14[o]	2	P	20,636	21·1	42·2	84·4	495	O	F	FC:PI
1094a	*Hepatica falconeri* (Thomson) Juz.	No	Ranunculaceae	E	14	2	P	14,768	15·1	30·2	60·4	495	O	F	FC:PI
1095a	*Hepatica henryi* Steward	No	Ranunculaceae	E	28	4	P	32,176	32·9	65·8	131·6	495	O	F	FC:PI
1096a	*Hepatica insularis* Nakai	No	Ranunculaceae	E	14[o]	2	P	20,391	20·9	41·7	83·4	495	O	F	FC:PI
1097a	*Hepatica maxima* (Nakai) Nakai	No	Ranunculaceae	E	14[o]	2	P	20,391	20·9	41·7	83·4	495	O	F	FC:PI
1098a	*Hepatica nobilis* Schreb var. *nobilis*.	No	Ranunculaceae	E	14[o]	2	P	18,729	19·2	38·3	76·6	495	O	F	FC:PI
1098b	*Hepatica nobilis* Schreb var. *japonica* f. *japonica* (M.Hiroe) Kitam.	No	Ranunculaceae	E	14[o]	2	P	20,391	20·9	41·7	83·4	495	O	F	FC:PI
1098c	*Hepatica nobilis* Schreb var. *japonica* f. *variegata* (Makino) Kitam.	No	Ranunculaceae	E	14[o]	2	P	20,440	20·9	41·8	83·6	495	O	F	FC:PI
1098d	*Hepatica nobilis* Schreb var. *japonica* f. *magna* (M.Hiroe) Kitam.	No	Ranunculaceae	E	14[o]	2	P	20,391	20·9	41·7	83·4	495	O	F	FC:PI
1099a	*Hepatica nobilis* Schreb var. *pubescens* (M.Hiroe) Kitam.	No	Ranunculaceae	E	28[o]	4	P	43,619	44·6	89·2	178·4	495	O	F	FC:PI
1100a	*Hepatica transsilvanica* Fuss	No	Ranunculaceae	E	28[o]	4	P	32,519	33·3	66·5	133·0	495	O	F	FC:PI
1101a	*Hepatica yamatutai* Nakai	No	Ranunculaceae	E	28[o]	4	P	34,719	35·5	71·0	142·0	495	O	F	FC:PI
1102b	*Hesperaloe parviflora* (Torrey) (Torr.) J.M.Coult.	No	Asparagaceae[k]	M	60[o]	–[p]	P	3,912	4·0	8·0	16·0	482	O	*Agave* sp.[e]	FC:PI
1103a	*Hesperoyucca whipplei* (Torrey) Baker	No	Asparagaceae[k]	M	60[o]	–[p]	P	3,814	3·9	7·8	15·6	482	O	*Agave* sp.[e]	FC:PI
1104b	*Heteranthelium piliferum* (Banks & Sol.) Hochst.	No[m1]	Poaceae[j]	M	14	2	A	4,088	4·2	8·4	16·7	605	O	F-2118p	FC:PI
1105c	*Hieracium aurantiacum* L.	Yes	Asteraceae[j]	E	36	4	P	3,809	3·9	7·8	15·6	569	O	H[c]	FC:PI
1106a	*Hieracium aurantiacum* L.	Yes	Asteraceae[j]	E	45	5	P	–[t]	–[t]	9·5	19·0	569	O	H[c]	FC:PI
1107a	*Hieracium bauhinii* Besser	Yes	Asteraceae[j]	E	36	4	P	4,044	4·1	8·3	16·5	569	O	H[c]	FC:PI
1108b	*Hieracium bauhinii* Besser	Yes	Asteraceae[j]	E	45	5	P	–[t]	–[t]	10·1	20·1	569	O	G[c]	FC:PI
1109a	*Hieracium bauhinii* Besser	Yes	Asteraceae[j]	E	54	6	P	5,575	5·7	11·4	22·8	569	O	G[c]	FC:PI
1110a	*Hieracium bauhinii* Besser	Yes	Asteraceae[j]	E	63	7	P	–[t]	–[t]	13·9	27·7	569	O	G[c]	FC:PI
1111a	*Hieracium bifurcum* M.Bieb.	Yes	Asteraceae[j]	E	45[o]	5	P	–[t]	–[t]	9·2	18·5	569	O	H[c]	FC:PI
1112a	*Hieracium blyttianum* Fries	Yes	Asteraceae[j]	E	36[o]	4	P	3,531	3·6	7·2	14·4	569	O	H[c]	FC:PI
1113b	*Hieracium brachiatum* Bert. ex DC.	Yes	Asteraceae[j]	E	36	4	P	3,677	3·8	7·5	15·0	569	O	H[c]	FC:PI
1114a	*Hieracium brachiatum* Bert. ex DC.	Yes	Asteraceae[j]	E	45	5	P	–[t]	–[t]	9·3	18·5	569	O	H[c]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
1115a	*Hieracium brachiatum* Bert. ex DC.	Yes	Asteraceae[j]	E	63	7	P	–[t]	–[t]	13·2	26·4	569	O	G[c]	FC:PI
1116a	*Hieracium brachiatum* Bert. ex DC.	Yes	Asteraceae[j]	E	72[o]	8	P	7,482	7·7	15·3	30·6	569	O	G[c]	FC:PI
1117a	*Hieracium caespitosum* Dumort.	Yes	Asteraceae[j]	E	36	4	P	4,020	4·1	8·2	16·4	569	O	H[c]	FC:PI
1118b	*Hieracium caespitosum* Dumort.	Yes	Asteraceae[j]	E	–[n]	5	P	–[t]	–[t]	10·1	20·2	569	O	G[c]	FC:PI
1119a	*Hieracium cymosum* L. subsp. *cymosum*	Yes	Asteraceae[j]	E	18	2	P	2,029	2·1	4·2	8·3	569	O	H[c]	FC:PI
1120a	*Hieracium cymosum* L. subsp. *cymosum*	Yes	Asteraceae[j]	E	36	4	P	3,873	4·0	7·9	15·8	569	O	H[c]	FC:PI
1121a	*Hieracium cymosum* L. subsp. *cymigerum* Reichenb.	Yes	Asteraceae[j]	E	45	5	P	–[t]	–[t]	10·1	20·1	569	O	G[c]	FC:PI
1122a	*Hieracium echioides* L.	Yes	Asteraceae[j]	E	18	2	P	2,108	2·2	4·3	8·6	569	O	H[c]	FC:PI
1123a	*Hieracium echioides* L.	Yes	Asteraceae[j]	E	27	3	P	–[t]	–[t]	6·5	13·0	569	O	H[c]	FC:PI
1124a	*Hieracium echioides* L.	Yes	Asteraceae[j]	E	36	4	P	4,186	4·3	8·6	17·1	569	O	H[c]	FC:PI
1125a	*Hieracium echioides* L.	Yes	Asteraceae[j]	E	45	5	P	–[t]	–[t]	10·6	21·1	569	O	H[c]	FC:PI
1126a	*Hieracium floribundum* Wimm. & Grab.	Yes	Asteraceae[j]	E	36[o]	4	P	4,010	4·1	8·2	16·4	569	O	H[c]	FC:PI
1127a	*Hieracium floribundum* Wimm. & Grab.	Yes	Asteraceae[j]	E	–[n]	5	P	–[t]	–[t]	10·4	20·8	569	O	G[c]	FC:PI
1128a	*Hieracium glomeratum* Froel.	Yes	Asteraceae[j]	E	36[o]	4	P	4,039	4·1	8·3	16·5	569	O	H[c]	FC:PI
1129a	*Hieracium glomeratum* Froel.	Yes	Asteraceae[j]	E	45[o]	5	P	–[t]	–[t]	10·2	20·4	569	O	G[c]	FC:PI
1130a	*Hieracium hoppeanum* Schultes	Yes	Asteraceae[j]	E	18	2	P	1,726	1·8	3·5	7·1	569	O	H[c]	FC:PI
1131a	*Hieracium iseranum* Uechtr.	Yes	Asteraceae[j]	E	36	4	P	3,848	3·9	7·9	15·7	569	O	H[c]	FC:PI
1132b	*Hieracium lactucella* Wallr.	Yes	Asteraceae[j]	E	18	2	P	1,990	2·0	4·1	8·1	569	O	H[c]	FC:PI
1133b	*Hieracium leptophyton* Nägeli & Peter	Yes	Asteraceae[j]	E	63	7	P	–[t]	–[t]	13·7	27·3	569	O	G[c]	FC:PI
1134a	*Hieracium macrostolonum* G.Schneider	Yes	Asteraceae[j]	E	–[n]	6	P	5,369	5·5	11·0	22·0	569	O	G[c]	FC:PI
1135a	*Hieracium onegense* (Norrl.) Norrl.	Yes	Asteraceae[j]	E	18	2	P	2,068	2·1	4·2	8·5	569	O	H[c]	FC:PI
1136a	*Hieracium pavichii* Heuffel	Yes	Asteraceae[j]	E	–[n]	2	P	1,922	2·0	3·9	7·9	569	O	H	FC:PI
1137a	*Hieracium pilosella* L.	Yes	Asteraceae[j]	E	36	4	P	3,369	3·4	6·9	13·8	569	O	H[c]	FC:PI
1138a	*Hieracium pilosella* L.	Yes	Asteraceae[j]	E	45	5	P	–[t]	–[t]	8·6	17·2	569	O	H[c]	FC:PI
1138a	*Hieracium pilosella* L.	Yes	Asteraceae[j]	E	54	6	P	5,100	5·2	10·4	20·9	569	O	G[c]	FC:PI
1140a	*Hieracium piloselliflorum* Nägeli & Peter	Yes	Asteraceae[j]	E	36	4	P	3,682	3·8	7·5	15·1	569	O	H[c]	FC:PI
1140a	*Hieracium pilosella* L.	Yes	Asteraceae[j]	E	63	7	P	–[t]	–[t]	12·1	24·2	569	O	G[c]	FC:PI
1141a	*Hieracium piloselliflorum* Nägeli & Peter	Yes	Asteraceae[j]	E	45	5	P	–[t]	–[t]	9·0	18·0	569	O	H[c]	FC:PI

1142a	*Hieracium piloselliflorum* Nägeli & Peter	Yes	Asteraceae[j]	E	54[o]	6	P	5,227	5·3	10·7	21·4	569	O	G[c]	FC:PI
1143a	*Hieracium rothianum* Wallr.	Yes	Asteraceae[j]	E	36[o]	4	P	3,980	4·1	8·1	16·3	569	O	H[c]	FC:PI
1144a	*Hieracium rubrum* Peter	Yes	Asteraceae[j]	E	54	6	P	5,403	5·5	11·1	22·1	569	O	G[c]	FC:PI
1145a	*Hieracium scandinavicum* Dahlst.	Yes	Asteraceae[j]	E	–[n]	4	P	3,985	4·1	8·2	16·3	569	O	H[c]	FC:PI
1146a	*Hieracium schultesii* F.W.Schultz	Yes	Asteraceae[j]	E	–[n]	3	P	–[t]	–[t]	5·5	11·1	569	O	H[c]	FC:PI
1147a	*Hieracium schultesii* F.W.Schultz	Yes	Asteraceae[j]	E	36	4	P	3,648	3·7	7·5	14·9	569	O	H[c]	FC:PI
1148a	*Hieracium schultesii* F.W.Schultz	Yes	Asteraceae[j]	E	45[o]	5	P	–[t]	–[t]	9·2	18·4	569	O	H[c]	FC:PI
1149a	*Hieracium stoloniflorum* Waldst. & Kit.	Yes	Asteraceae[j]	E	36	4	P	3,545	3·6	7·3	14·5	569	O	H[c]	FC:PI
1150a	*Hierochloe brunonis* Hook.f.	Yes	Poaceae[j]	M	84	12	P	13,599	13·9	27·8	55·6	528	O	–[w]	FC:PI
1151a	*Hierochloe equiseta* Zotov	Yes	Poaceae[j]	M	42	6	P	8,851	9·1	18·1	36·2	528	O	–[w]	FC:PI
1152a	*Hierochloe fusca* Zotov	Yes	Poaceae[j]	M	84	12	P	13,472	13·8	29·7	55·1	528	O	–[w]	FC:PI
1152b	*Hierochloe fusca* Zotov[i]	Yes	Poaceae[j]	M	84	12	P	14,514	14·8	29·7	59·4	528	O	–[w]	FC:PI
1153a	*Hierochloe novae-zelandiae* Gand.	Yes	Poaceae[j]	M	28	4	P	6,132	6·3	12·5	25·1	528	O	–[w]	FC:PI
1154a	*Hierochloe redolens* (Vahl) Roem. & Schult.	Yes	Poaceae[j]	M	84	12	P	14,655	15·0	30·0	59·9	528	O	–[w]	FC:PI
1155a	*Hippolytia megacephala* (Rupr.) Poljakov	Yes	Asteraceae[j]	E	18[o]	2	P	6,098	6·2	12·5	24·9	521	O	G[c]	FC:PI
1156a	*Hirschfeldia incana* (L.) Lagr.-Fossat	Yes	Brassicaceae[j]	E	16	2	–[q]	509	0·5	1·0	2·1	599	O	L	FC:PI
1157a	*Hitchenia caulina* (J. Graham) Baker (= *Curcuma caulina* J. Graham)	Yes	Zingiberaceae	M	42	6	P	1,095	1·1	2·2	4·5	562	O	*Bellis*[e]	FC:PI
1158a	*Holarrhena pubescens* Wall. ex G.Don	No	Apocynaceae	E	–[n]	–[p]	P	770	0·8	1·6	3·2	501[ag]	O	B[c]	Fe
1159a	*Hordeum arizonicum* Covas	Yes	Poaceae[j]	M	42	6	A	12,069	12·3	24·7	49·4	491	O	E[c]	FC:PI
1160b	*Hordeum bogdanii* Wilensky	Yes	Poaceae[j]	M	14	2	P	4,636	4·7	9·5	19·0	491	O	E[c]	FC:PI
1161b	*Hordeum brachyantherum* Nevski subsp. *californicum* (Covas & Stebbins) Bothmer, Jacobsen & Seberg	Yes	Poaceae[j]	M	14	2	P	4,352	4·5	8·9	17·8	491	O	E[c]	FC:PI
1162a	*Hordeum brachyantherum* Nevski subsp. *brachyantherum*	Yes	Poaceae[j]	M	28	4	P	9,081	9·3	18·6	37·1	491	O	G[c]	FC:PI
1163a	*Hordeum brachyantherum* Nevski subsp. *brachyantherum*	Yes	Poaceae[j]	M	42	6	P	14,132	14·5	28·9	57·8	491	O	E[c]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
1164a	*Hordeum brevisubulatum* (Trin.) Link subsp. *brevisubulatum*	Yes	Poaceae[j]	M	28	4	P	8,709	8·9	17·8	35·6	491	O	G[c]	FC:PI
1164b	*Hordeum brevisubulatum* (Trin.) Link subsp. *turkestanicum* (Nevski) Tzvelev	Yes	Poaceae[j]	M	28	4	P	8,880	9·1	18·2	36·3	491	O	G[c]	FC:PI
1165a	*Hordeum brevisubulatum* (Trin.) Link	Yes	Poaceae[j]	M	42	6	P	13,159	13·5	26·9	53·8	491	O	E[c]	FC:PI
1166c	*Hordeum bulbosum* L.	Yes	Poaceae[j]	M	14	2	P	4,342	4·4	8·9	17·8	491	O	E[c]	FC:PI
1167c	*Hordeum bulbosum* L.	Yes	Poaceae[j]	M	28	4	P	8,460	8·7	17·3	34·6	491	O	G[c]	FC:PI
1168a	*Hordeum capense* Thunb.	Yes	Poaceae[j]	M	28	4	P	9,653	9·9	19·7	39·5	491	O	G[c]	FC:PI
1169c	*Hordeum chilense* Roem. & Schult.	Yes	Poaceae[j]	M	14	2	P	4,289	4·4	8·8	17·5	491	O	E[c]	FC:PI
1170b	*Hordeum comosum* J.Presl	Yes	Poaceae[j]	M	14	2	P	4,386	4·5	9·0	17·9	491	O	E[c]	FC:PI
1171a	*Hordeum cordobense* Bothmer, Jacobsen & Nicora	Yes	Poaceae[j]	M	14	2	P	4,494	4·6	9·2	18·4	491	O	E[c]	FC:PI
1172a	*Hordeum depressum* (Scribn. & J.G.Sm.) Rydb.	Yes	Poaceae[j]	M	28	4	A	7,589	7·8	15·5	31·0	491	O	G[c]	FC:PI
1173a	*Hordeum erectifolium* Bothmer, Jacobsen & Jørgensen	Yes	Poaceae[j]	M	14	2	P	4,641	4·7	9·5	19·0	491	O	E[c]	FC:PI
1174a	*Hordeum euclaston* Steud.	Yes	Poaceae[j]	M	14	2	A	3,350	3·4	6·9	13·7	491	O	E[c]	FC:PI
1175b	*Hordeum flexuosum* Nees ex Steud.	Yes	Poaceae[j]	M	14	2	P	4,161	4·3	8·5	17·0	491	O	E[c]	FC:PI
1176a	*Hordeum fuegianum* Bothmer, Jacobsen & Jørgensen	Yes	Poaceae[j]	M	28	4	P	8,753	9·0	17·9	35·8	491	O	G[c]	FC:PI
1177a	*Hordeum hystrix* Roth	No[m1]	Poaceae[j]	M	14	2	A	4,919	5·0	10·1	20·1	605	O	F-2118p	FC:PI
1178a	*Hordeum intercedens* Nevski	Yes	Poaceae[j]	M	14	2	A	3,428	3·5	7·0	14·0	491	O	E[c]	FC:PI
1179b	*Hordeum jubatum* L.	Yes	Poaceae[j]	M	28	4	BP	8,646	8·8	17·7	35·4	491	O	G[c]	FC:PI
1180a	*Hordeum lechleri* (Steud.) Schenck	Yes	Poaceae[j]	M	42	6	P	13,022	13·3	26·6	53·3	491	O	E[c]	FC:PI
1181b	*Hordeum marinum* Huds. subsp. *marinum*	Yes	Poaceae[j]	M	14	2	A	4,450	4·6	9·1	18·2	491	O	E[c]	FC:PI
1181c	*Hordeum marinum* Huds. subsp. *gussoneanum* (Parl.) Thell.	Yes	Poaceae[j]	M	14	2	A	5,090	5·2	10·4	20·8	491	O	E[c]	FC:PI
1182a	*Hordeum marinum* Huds. subsp. *gussoneanum* (Parl.) Thell.	Yes	Poaceae[j]	M	28	4	A	9,604	9·8	19·6	39·3	491	O	G[c]	FC:PI
1183b	*Hordeum murinum* L. subsp. *glaucum*	Yes	Poaceae[j]	M	14	2	A	4,455	4·6	9·1	18·2	491	O	E[c]	FC:PI
1183c	*Hordeum murinum* L. subsp. *glaucum*	No[m1]	Poaceae[j]	M	14	2	A	6,230	6·4	12·7	25·5	605	O	F-2118p	FC:PI

1184c	*Hordeum murinum* L. subsp. *murinum*	Yes	Poaceae[j]	M	28	4	A	9,624	9·8	19·7	39·4	491	O	G[c]	FC:PI
1184d	*Hordeum murinum* L. subsp. *leporinum* (Link) Arcang.	Yes	Poaceae[j]	M	28	4	A	9,389	9·6	19·2	38·4	491	O	G[c]	FC:PI
1185e	*Hordeum murinum* L. subsp. *leporinum* (Link) Arcang.	Yes	Poaceae[j]	M	42	6	A	14,597	14·9	29·9	59·7	491	O	E[c]	FC:PI
1186a	*Hordeum muticum* J.Presl	Yes	Poaceae[j]	M	14	2	P	4,680	4·8	9·6	19·1	491	O	E[c]	FC:PI
1187a	*Hordeum parodii* Covas	Yes	Poaceae[j]	M	42	6	P	12,807	13·1	26·2	52·4	491	O	E[c]	FC:PI
1188a	*Hordeum patagonicum* (Haumann) Covas subsp. *santacrucense* (Parodi & Nicora) Bothmer, Giles & Jacobsen	Yes	Poaceae[j]	M	14	2	P	4,474	4·6	9·2	18·3	491	O	E[c]	FC:PI
1188b	*Hordeum patagonicum* (Haumann) Covas subsp. *magellanicum* (Parodi & Nicora) Bothmer, Giles & Jacobsen	Yes	Poaceae[j]	M	14	2	P	4,562	4·7	9·3	18·7	491	O	E[c]	FC:PI
1188c	*Hordeum patagonicum* (Haumann) Covas subsp. *patagonicum*	Yes	Poaceae[j]	M	14	2	P	4,626	4·7	9·5	18·9	491	O	E[c]	FC:PI
1188d	*Hordeum patagonicum* (Haumann) Covas subsp. *setifolium* (Parodi & Nicora) Bothmer, Giles & Jacobsen	Yes	Poaceae[j]	M	14	2	P	4,699	4·8	9·6	19·2	491	O	E[c]	FC:PI
1188e	*Hordeum patagonicum* (Haumann) Covas subsp. *mustersii* (Nicora) Bothmer, Giles & Jacobsen	Yes	Poaceae[j]	M	14	2	P	4,289	4·4	8·8	17·5	491	O	E[c]	FC:PI
1189a	*Hordeum procerum* Nevski	Yes	Poaceae[j]	M	42	6	P	13,291	13·6	27·2	54·4	491	O	E[c]	FC:PI
1190a	*Hordeum pubiflorum* Hook.f. subsp. *pubiflorum*	Yes	Poaceae[j]	M	14	2	P	4,220	4·3	8·6	17·3	491	O	E[c]	FC:PI
1190b	*Hordeum pubiflorum* Hook.f. subsp. *halophilum* (Griseb.) Baden & Bothmer	Yes	Poaceae[j]	M	14	2	P	4,254	4·4	8·7	17·4	491	O	E[c]	FC:PI
1191b	*Hordeum pusillum* Nutt.	Yes	Poaceae[j]	M	14	2	A	3,501	3·6	7·2	14·3	491	O	E[c]	FC:PI
1192c	*Hordeum roshevitzii* Bowden	Yes	Poaceae[j]	M	14	2	P	4,738	4·8	9·7	19·4	491	O	E[c]	FC:PI
1193b	*Hordeum secalinum* Schreb.	Yes	Poaceae[j]	M	28	4	P	9,770	10·0	20·0	40·0	491	O	G[c]	FC:PI
1194b	*Hordeum spontaneum* K.Koch[h]	–[m]	Poaceae[j]	M	14[o]	2	P	4,572	4·7	9·4	18·7	470	O	Trout[f]	FC:PI
1194c	*Hordeum spontaneum* K.Koch[h]	–[m]	Poaceae[j]	M	14[o]	2	P	4,797	4·9	9·8	19·6	470	O	Trout[f]	FC:PI
1194d	*Hordeum spontaneum* K. Koch	No[m1]	Poaceae[j]	M	14	2	A	5,379	5·5	11·0	22·0	605	O	F-2118p	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
1195b	*Hordeum stenostachys* Godr.	Yes	Poaceae[j]	M	14	2	P	4,587	4·7	9·4	18·8	491	O	E[c]	FC:PI
1196a	*Hordeum tetraploidum* Covas	Yes	Poaceae[j]	M	28	4	P	8,743	8·9	17·9	35·8	491	O	G[c]	FC:PI
1197r	*Hordeum vulgare* L.	Yes	Poaceae[j]	M	–[n]	–[p]	A	5,022	5·1	10·3	20·5	492	O	E[c]	FC:PI
1197s	*Hordeum vulgare* L. subsp. *vulgare*	Yes	Poaceae[j]	M	14	2	A	5,179	5·3	10·6	21·2	491	O	E[c]	FC:PI
1197t	*Hordeum vulgare* L. subsp. *spontaneum* (K.Koch) Thell	Yes	Poaceae[j]	M	14	2	A	5,218	5·3	10·7	21·3	491	O	E[c]	FC:PI
1198a	*Hornungia petraea* Rchb.	Yes	Brassicaceae[j]	E	12	2	–[q]	166	0·2	0·3	0·7	599	O	L	FC:PI
1199a	*Hornungia procumbens* (L.) Hayek	Yes	Brassicaceae[j]	E	12[o]	2	–[q]	205	0·2	0·4	0·8	599	O	L	FC:PI
1200b	*Hosta minor* Nakai	No	Asparagaceae[k]	M	60[o]	–[p]	P	8,411	8·6	17·2	34·4	482	O	*Agave* sp.[e]	FC:PI
1201a	*Humulus japonicus* Siebold & Zucc. (female)	No	Cannabaceae	E	16	2	A	1,569	1·6	3·2	6·4	543	O	H[c]	FC:PI
1201b	*Humulus japonicus* Siebold & Zucc. (male)	No	Cannabaceae	E	17	2	A	1,722	1·8	3·5	7·0	543	O	H[c]	FC:PI
1202c	*Humulus lupulus* L. cv. Lubelski (female)	No	Cannabaceae	E	20	2	P	2,737	2·8	5·6	11·2	543	O	*Petunia*[e]	FC:PI
1202d	*Humulus lupulus* L. (male)	No	Cannabaceae	E	20	2	P	2,701	2·8	5·5	11·0	543	O	*Petunia*[e]	FC:PI
1202e	*Humulus lupulus* L. var. *neomexicanus* (female)	No	Cannabaceae	E	20	2	P	2,965	3·0	6·1	12·1	543	O	*Petunia*[e]	FC:PI
1203f	*Humulus lupulus* L.	No	Cannabaceae	E	30	3	P	–[t]	–[t]	9·0	17·9	543	O	*Petunia*[e]	FC:PI
1204a	*Hunteria zeylanica* (Retz.) Gardner ex Thwaites	No	Apocynaceae	E	–[n]	–[p]	P	685	0·7	1·4	2·8	501[ag]	O	B[c]	Fe
1205a	*Hypericum canariense* L.	–[m]	Hypericaceae[k]	E	40[o]	4	P	494	0·5	1·0	2·0	477	O	*Raphanus*[e]	FC:PI
1206a	*Hypericum glandulosum* Choisy	–[m]	Hypericaceae[k]	E	18[o]	2	P	333	0·3	0·7	1·4	552	O	*Raphanus*[e]	FC:PI
1207a	*Hypericum grandifolium* Choisy	–[m]	Hypericaceae[k]	E	40[o]	4	P	396	0·4	0·8	1·6	477	O	*Raphanus*[e]	FC:PI
1208a	*Hypericum reflexum* L.f.	–[m]	Hypericaceae[k]	E	18[o]	2	P	328	0·3	0·7	1·3	552	O	*Raphanus*[e]	FC:PI
1209a	*Hypochaeris oligocephala* (Svent. & Bramw.) Lack	–[m]	Asteraceae[j]	E	6[o]	2	P	1,115	1·1	2·3	4·6	477	O	*Solan.*[e]	FC:PI
1210b	*Hyssopus officinalis* L.	Yes	Lamiaceae[j]	E	–[n]	–[p]	P	548	0·6	1·1	2·2	492	O	*Raphanus*[e]	FC:PI
1211a	*Iberis gibraltarica* L.	Yes	Brassicaceae[j]	E	14	2	–[q]	557	0·6	1·1	2·3	599	O	L	FC:PI
1212a	*Iberis sempervirens* L.	Yes	Brassicaceae[j]	E	22[o]	–[p]	–[q]	548	0·6	1·1	2·2	599	O	L	FC:PI
1213b	*Ilex aquifolium*[l]	No	Aquifoliaceae	E	–[n]	–[p]	P	944	1·0	1·9	3·9	563	O	*Glycine*[e]	FC:PI
1213c	*Ilex aquifolium* L.	Yes	Aquifoliaceae	E	–[n]	–[p]	P	3,051	3·1	6·2	12·5	489	O	–[w]	FC:EB
1214a	*Imperata cheesemanii* Hack.	Yes	Poaceae[j]	M	20	2	P	709	0·7	1·5	2·9	528	O	–[w]	FC:PI
1214b	*Imperata cheesemanii* Hack.	Yes	Poaceae[j]	M	20	2	P	489	0·5	1·0	2·0	476	O	*Actinidia*[e]	FC:PI
1215a	*Inula crithmoides* L.	Yes	Asteraceae[j]	E	18[o]	2	P	1,775	1·8	3·6	7·3	580	O	G[c]	CIA
1216c	*Ipomoea purpurea*[l]	No	Convolvulaceae	E	30[o]	–[p]	–[q]	738	0·8	1·5	3·0	568	O	–[w]	FC:PI

1217a	*Iris brevicaulis* Randolf	–[m]	Iridaceae	M	–[n]	–[p]	P	9,658	9·9	19·8	39·5	551	O	B	FC:PI
1218a	*Iris fulva* Walter	–[m]	Iridaceae	M	–[n]	–[p]	P	9,570	9·8	19·6	39·1	551	O	B	FC:PI
1219a	*Iris hexagona* Ker Gawl.	–[m]	Iridaceae	M	–[n]	–[p]	P	9,580	9·8	19·6	39·2	551	O	B	FC:PI
1220a	*Iris nelsonii* Raf.	–[m]	Iridaceae	M	–[n]	–[p]	P	9,800	10·0	20·0	40·1	551	O	B	FC:PI
1221a	*Isachne globosa* (Thunb.) Kuntze	Yes	Poaceae[j]	M	60[o]	6	P	1,780	1·8	3·6	7·3	528	O	–[w]	FC:PI
1221b	*Isachne globosa* (Thunb.) Kuntze	Yes	Poaceae[j]	M	60	6	P	1,223	1·3	2·5	5·0	476	O	*Actinidia*[e]	FC:PI
1222a	*Isatis tinctoria* L.	Yes	Brassicaceae[j]	E	28	–[p]	–[q]	567	0·6	1·2	2·3	599	O	L	FC:PI
1223a	*Isonandra villosa* Blume	No	Sapotaceae	E	–[n]	–[p]	P	2,513	2·6	5·1	10·3	501[ag]	O	B[c]	Fe
1224a	*Isoplexis canariensis* (L.) Loud.	–[m]	Plantaginaceae	E	56[o]	8	P	973	1·0	2·0	4·0	477	O	*Glycine*[e]	FC:PI
1225a	*Isoplexis chalcantha* Svent. & O'Shan.	–[m]	Plantaginaceae	E	56	8	P	993	1·0	2·0	4·1	552	O	*Glycine*[e]	FC:PI
1226a	*Ixanthus viscosus* (Sm.) Griseb.	–	Gentianaceae	E	c. 70	c. 10	P	1,017	1·0	2·1	4·2	552	O	*Glycine*[e]	FC:PI
1227a	*Jacaranda cuspidifolia* Mart. ex A.DC.	No	Bignoniaceae	E	–[n]	–[p]	P	1,271	1·3	2·6	5·2	501[ag]	O	B[c]	Fe
1228a	*Jacquinia aculeate* (L.) Mez	No	Primulaceae[k]	E	–[n]	–[p]	P	1,042	1·1	2·1	4·3	501[ag]	O	B[c]	Fe
1229a	*Jasminum odoratissimum* L.	–[m]	Oleaceae	E	26[o]	≥ 2	P	1,403	1·4	2·9	5·7	552	O	*Glycine*[e]	FC:PI
1230a	*Jatropha curcas* L.	–[m]	Euphorbiaceae	E	22	2	P	416	0·4	0·9	1·7	561	O	*Raphanus*[e]	FC:PI
1231a	*Juglans regia* L.	Yes	Juglandaceae	E	–[n]	–[p]	P	606	0·6	1·2	2·5	489	O	–[w]	FC:EB
1232a	*Juncus biglumis* L.	Yes	Juncaceae	M	60	–[p]	P	553	0·6	1·1	2·3	541	O	*Solan.*[e]	FC:PI
1233a	*Juncus biglumis* L.	Yes	Juncaceae	M	120	–[p]	P	597	0·6	1·2	2·4	541	O	*Solan.*[e]	FC:PI
1234a	*Justicia hyssopifolia* L.	–	Acanthaceae	E	c. 70	c. 10	P	2,841	2·9	5·8	11·6	552	O	G[c]	FC:PI
1235a	*Kaempferia scaposa* (Nimmo) Benth. (= *Curcuma scaposa* (Nimmo) Škorničk. & M.Sabu comb. nov.)	Yes	Zingiberaceae	M	42	6	P	1,139	1·2	2·3	4·7	562	O	*Glycine*[e]	FC:PI
1236a	*Kaschgaria brachanthemoides* (C.Winkl.) Poljakov	Yes	Asteraceae[j]	E	18[o]	2	P	6,890	7·0	14·1	28·2	521	O	G[c]	FC:PI
1237a	*Kernera saxatilis* (L.) Reichb.	Yes	Brassicaceae[j]	E	16[o]	2	–[q]	196	0·2	0·4	0·8	599	O	L	FC:PI
1238a	*Kickxia scoaria* (Brouss. ex Spreng.) G.Kunkel & Sunding	–[m]	Plantaginaceae	E	18[o]	2	A	914	0·9	1·9	3·7	552	O	*Glycine*[e]	FC:PI
1239a	*Kleinia neriifolia* Haw.	–[m]	Asteraceae[j]	E	20[o]	2	P	8,846	9·0	18·1	36·2	552	O	G[c]	FC:PI
1240a	*Koeleria* aff. *cheesemanii*[l]	Yes	Poaceae[j]	M	28	4	P	6,469	6·6	13·2	26·5	528	O	–[w]	FC:PI
1241a	*Koeleria* aff. *novozelandica*[l]	Yes	Poaceae[j]	M	28	4	P	5,090	5·2	10·4	20·8	528	O	–[w]	FC:PI
1242a	*Koeleria cheesemanii* (Hack.) Petrie	Yes	Poaceae[j]	M	28	4	P	4,866	5·0	10·0	19·9	528	O	–[w]	FC:PI
1243a	*Koeleria glauca* (Spreng.) DC.	Yes	Poaceae[j]	M	14	2	P	2,543	2·6	5·2	10·4	533	O	E[c]	FC:PI
1244a	*Koeleria macrantha* (Schur) Travnicek & Pecinka ined. subsp. *macrantha* var. *pseudoglauca*	Yes	Poaceae[j]	M	14	2	P	2,372	2·4	4·9	9·7	533	O	E[c]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[$])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
1244b	*Koeleria macrantha* (Ledeb.) Schult. subsp. *macrantha* var. *macrantha*	Yes	Poaceae[j]	M	14	2	P	2,421	2·5	5·0	9·9	533	O	E[c]	FC:PI
1245a	*Koeleria macrantha* (Borbas) Travnicek & Pecinka ined. subsp. *macrantha* var. *majoriflora*	Yes	Poaceae[j]	M	28	4	P	4,553	4·7	9·3	18·6	533	O	E[c]	FC:PI
1246a	*Koeleria novozelandica* Domin s.s.	Yes	Poaceae[j]	M	28	4	P	4,802	4·9	9·8	19·6	528	O	–[w]	FC:PI
1246b	*Koeleria novozelandica* Domin s.s.	Yes	Poaceae[j]	M	28	4	P	2,885	3·0	5·9	11·8	476	O	*Actinidia*[e]	FC:PI
1247a	*Koeleria pyramidata* (Lam.) Beauv.	Yes	Poaceae[j]	M	70	10	P	11,193	11·4	22·9	45·8	533	O	E[c]	FC:PI
1248a	*Koeleria tristis* Domin	Yes	Poaceae[j]	M	c. 84	12	P	14,293	14·6	29·2	58·5	533	O	E[c]	FC:PI
1249a	*Koelreuteria apiculata* Rehder & E.H.Wilson	No	Sapindaceae	E	–[n]	–[p]	P	440	0·5	0·9	1·8	501[ag]	O	B[c]	Fe
1250a	*Lachnagrostis ammobia* Edgar	Yes	Poaceae[j]	M	98	14	P	12,460	12·7	25·5	51·0	528	O	–[w]	FC:PI
1251a	*Lachnagrostis billardierei* (R.Br.) Trin.	Yes	Poaceae[j]	M	56	8	P	8,924	9·1	18·3	36·5	528	O	–[w]	FC:PI
1251b	*Lachnagrostis billardierei* (R.Br.) Trin.	Yes	Poaceae[j]	M	56	8	P	4,108	4·2	8·4	16·8	476	O	*Actinidia*[e]	FC:PI
1252a	*Lachnagrostis elata* Edgar	Yes	Poaceae[j]	M	98	14	P	13,110	13·4	26·8	53·6	528	O	–[w]	FC:PI
1253a	*Lachnagrostis filiformis* (G.Forst) Trin.	Yes	Poaceae[j]	M	56	8	AP	6,147	6·3	12·6	25·1	528	O	–[w]	FC:PI
1254a	*Lachnagrostis leptostachys* (Hook.f.) Zotov[i]	Yes	Poaceae[j]	M	84	12	P	12,328	12·6	25·2	50·4	528	O	–[w]	FC:PI
1255a	*Lachnagrostis littoralis* (Hack.) Edgar subsp. *littoralis*[i]	Yes	Poaceae[j]	M	56	8	A	6,587	6·7	13·5	26·9	528	O	–[w]	FC:PI
1255b	*Lachnagrostis littoralis* (Hack.) Edgar subsp. *littoralis*[i]	Yes	Poaceae[j]	M	56	8	A	7,491	7·7	15·3	30·6	528	O	–[w]	FC:PI
1255c	*Lachnagrostis littoralis* (Hack.) Edgar subsp. *salaria*[i]	Yes	Poaceae[j]	M	56	8	A	8,176	8·4	16·7	33·4	528	O	–[w]	FC:PI
1256a	*Lachnagrostis lyallii* (Hook.f.) Zotov[i]	Yes	Poaceae[j]	M	98	14	P	8,357	8·5	17·1	34·2	528	O	–[w]	FC:PI
1256b	*Lachnagrostis lyallii* (Hook.f.) Zotov[i]	Yes	Poaceae[j]	M	98	14	P	11,477	11·7	23·5	46·9	528	O	–[w]	FC:PI
1256c	*Lachnagrostis lyallii* (Hook.f.) Zotov	Yes	Poaceae[j]	M	98	14	P	3,325	3·4	6·8	13·6	476	O	*Actinidia*[e]	FC:PI
1257b	*Lachnagrostis pilosa* (Buchanan) Edgar subsp. *pilosa*	Yes	Poaceae[j]	M	56	8	P	4,010	4·1	8·2	16·4	476	O	*Actinidia*[e]	FC:PI

1258a	*Lachnagrostis pilosa* (Buchanan) Edgar subsp. *pilosa*[i]	Yes	Poaceae[j]	M	98	14	P	12,059	12·3	24·7	49·3	528	O	–[w]	FC:PI
1258c	*Lachnagrostis pilosa* (Buchanan) Edgar subsp. *pilosa*	Yes	Poaceae[j]	M	98	14	P	4,890	5·0	10·0	20·0	476	O	*Actinidia*[e]	FC:PI
1259a	*Lachnagrostis striata* (Colenso) Zotov	Yes	Poaceae[j]	M	84	12	P	4,597	4·7	9·4	18·8	476	O	*Actinidia*[e]	FC:PI
1260a	*Lachnagrostis uda* Edgar	Yes	Poaceae[j]	M	98	14	P	12,470	12·8	25·5	51·0	528	O	–[w]	FC:PI
1261a	*Lactuca aculeata* Boiss. & Ky.	No	Asteraceae[j]	E	18	2	–[q]	2,685	2·7	5·5	11·0	608	O	*Lactuca*[e]	FC:DAPI
1262a	*Lactuca alpina* (L.) Gray	No	Asteraceae[j]	E	18	2	–[q]	2,910	3·0	6·0	11·9	608	O	*Lactuca*[e]	FC:DAPI
1263a	*Lactuca altaica* Fisch. & Mey.	No	Asteraceae[j]	E	18	2	–[q]	3,022	3·1	6·2	12·4	608	O	*Lactuca*[e]	FC:DAPI
1264a	*Lactuca angustana* All.	No	Asteraceae[j]	E	18	2	–[q]	3,198	3·3	6·5	13·1	608	O	*Lactuca*[e]	FC:DAPI
1265a	*Lactuca biennis* (Moench) Fernald	No	Asteraceae[j]	E	34	4	–[q]	7,990	8·2	16·3	32·7	608	O	*Lactuca*[e]	FC:DAPI
1266a	*Lactuca canadensis* L.	No	Asteraceae[j]	E	34	4	–[q]	8,782	9·0	18·0	35·9	608	O	*Lactuca*[e]	FC:DAPI
1267a	*Lactuca capensis* Thunb.	No	Asteraceae[j]	E	16	2	–[q]	988	1·0	2·0	4·0	608	O	*Lactuca*[e]	FC:DAPI
1268a	*Lactuca dentata* L. (Thunb.)	No	Asteraceae[j]	E	18	2	–[q]	3,125	3·2	6·4	12·8	608	O	*Lactuca*[e]	FC:DAPI
1269a	*Lactuca denticulata* (Houtt.) Maxim.	No	Asteraceae[j]	E	18	2	–[q]	3,100	3·2	6·3	12·7	608	O	*Lactuca*[e]	FC:DAPI
1270a	*Lactuca dregeana* DC.	No	Asteraceae[j]	E	18	2	–[q]	2,963	3·0	6·1	12·1	608	O	*Lactuca*[e]	FC:DAPI
1271a	*Lactuca homblei* De Willd.	No	Asteraceae[j]	E	18	2	–[q]	4,768	4·9	9·8	19·5	608	O	*Lactuca*[e]	FC:DAPI
1272a	*Lactuca indica* L.[i]	No	Asteraceae[j]	E	18	2	–[q]	5,804	5·9	11·9	23·7	608	O	*Lactuca*[e]	FC:DAPI
1272b	*Lactuca indica* L.[i]	No	Asteraceae[j]	E	18	2	–[q]	6,905	7·1	14·1	28·2	608	O	*Lactuca*[e]	FC:DAPI
1273a	*Lactuca livida* Boiss. & Reut.[i]	No	Asteraceae[j]	E	18	2	–[q]	2,998	3·1	6·1	12·3	608	O	*Lactuca*[e]	FC:DAPI
1274a	*Lactuca palmensis* Bolle	–[m]	Asteraceae[j]	E	–[n]	2[z]	P	1,002	1·0	2·1	4·1	477	O	*Glycine*[e]	FC:PI
1275a	*Lactuca perennis* L.	No	Asteraceae[j]	E	18	2	–[q]	2,699	2·8	5·5	11·0	608	O	*Lactuca*[e]	FC:DAPI
1276a	*Lactuca quercina* L.	No	Asteraceae[j]	E	18	2	–[q]	4,259	4·4	8·7	17·4	608	O	*Lactuca*[e]	FC:DAPI
1277a	*Lactuca saligna* L.	No	Asteraceae[j]	E	18	2	–[q]	2,328	2·4	4·8	9·5	608	O	*Lactuca*[e]	FC:DAPI
1278f	*Lactuca sativa* L.	Yes	Asteraceae[j]	E	–[n]	–[p]	AB	3,232	3·3	6·6	13·2	492	O	*Glycine*[e]	FC:PI
1279b	*Lactuca serriola* f. *serriola* L.	No	Asteraceae[j]	E	18	2	B	2,729	2·8	5·6	11·2	608	O	*Lactuca*[e]	FC:DAPI
1279c	*Lactuca serriola* f. *integrifolia* L.	No	Asteraceae[j]	E	18	2	B	3,110	3·2	6·4	12·7	608	O	*Lactuca*[e]	FC:DAPI
1280a	*Lactuca sibirica* (L.) Benth. ex Maxim.	No	Asteraceae[j]	E	–[n]	–[p]	–[q]	4,142	4·2	8·5	16·9	608	O	*Lactuca*[e]	FC:DAPI
1281a	*Lactuca squarrosa* (Thunb.) Miq.	No	Asteraceae[j]	E	18	2	–[q]	3,188	3·3	6·5	13·0	608	O	*Lactuca*[e]	FC:DAPI
1282a	*Lactuca taraxacifolia* Chalk.	No	Asteraceae[j]	E	18	2	–[q]	1,501	1·5	3·1	6·1	608	O	*Lactuca*[e]	FC:DAPI
1283a	*Lactuca tatarica* (L.) C.A.Mey.	No	Asteraceae[j]	E	18	2	–[q]	4,504	4·6	9·2	18·4	608	O	*Lactuca*[e]	FC:DAPI
1284a	*Lactuca tenerrima* Pourr.	No	Asteraceae[j]	E	16	2	–[q]	1,149	1·2	2·4	4·7	608	O	*Lactuca*[e]	FC:DAPI
1285a	*Lactuca viminea* (L.) J. & C. Presl subsp. *chondrilliflora* (Boreau) Bonnier	No	Asteraceae[j]	E	18	2	–[q]	2,240	2·3	4·6	9·2	608	O	*Lactuca*[e]	FC:DAPI
1286a	*Lactuca virosa* L. var. *virosa*	No	Asteraceae[j]	E	18	2	–[q]	3,672	3·8	7·5	15·0	608	O	*Lactuca*[e]	FC:DAPI
1286b	*Lactuca virosa* L. var. *virosa*	No	Asteraceae[j]	E	18	2	–[q]	4,284	4·4	8·8	17·5	608	O	*Lactuca*[e]	FC:DAPI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
1287a	*Lagenaria siceraria* (Molina) Standley[h]	No[m1]	Cucurbitaceae	E	22	2	A	334	0·3	0·7	1·4	583	O	*Raphanus*[e]	FC:PI
1287b	*Lagenaria siceraria* (Molina) Standley[h]	No[m1]	Cucurbitaceae	E	22	2	A	379	0·4	0·8	1·6	583	O	*Raphanus*[e]	FC:PI
1288a	*Lambertia formosa* Sm.	–[m]	Proteaceae	E	–[n]	–[p]	–[q]	973	1·0	2·0	4·0	526	O	A	FC:PI
1289a	*Lamium argentatum* (Smejkal) Henker ex G.H.Loos	Yes	Lamiaceae[j]	E	36	4	P	3,095	3·2	6·3	12·7	591	O	*Glycine*[e]	FC:PI
1290a	*Lamium flavidum* F.Herm.	Yes	Lamiaceae[j]	E	18	2	P	1,667	1·7	3·4	6·8	591	O	*Glycine*[e]	FC:PI
1291a	*Lamium galeobdolon* (L.) L.	Yes	Lamiaceae[j]	E	18	2	P	1,599	1·6	3·3	6·5	591	O	*Glycine*[e]	FC:PI
1292a	*Lamium montanum* (Pers.) Rchb.	Yes	Lamiaceae[j]	E	36	4	P	3,110	3·2	6·4	12·7	591	O	*Glycine*[e]	FC:PI
1293a	*Lannea coromandelica* (Houtt.) Merr	No	Anacardiaceae	E	30[o]	2	P	736	0·8	1·5	3·0	501[ag]	O	B[c]	Fe
1294a	*Lannea grandis* (Dennst.) Engl.	No	Anacardiaceae	E	–[n]	–[p]	P	611	0·6	1·3	2·5	501[ag]	O	B[c]	Fe
1295e	*Lathyrus articulatus* L.	Yes	Fabaceae[j]	E	14[o]	2	A	5,624	5·8	11·5	23·0	554	O	G[c]	FC:PI
1296b	*Laurus nobilis* L.	Yes	Lauraceae	BA	–[n]	–[p]	P	3,301	3·4	6·8	13·5	489	O	–[w]	FC:EB
1297a	*Lavandula buchii* Webb & Berthel. var. *buchii*	–[m]	Lamiaceae[j]	E	22[o]	2	P	494	0·5	1·0	2·0	477	O	*Solan.*[e]	FC:PI
1298a	*Lavandula multifida* L. subsp. *canariensis*	–[m]	Lamiaceae[j]	E	22[o]	2	P	499	0·5	1·0	2·0	477	O	*Solan.*[e]	FC:PI
1299b	*Leochilus oncidioides* Knowles & West.	Yes	Orchidaceae	M	–[n]	–[p]	P	1,174	1·2	2·4	4·8	504[ah]	O	–[w]	FC:DAPI
1300a	*Lepidium apetalum* Willd.	Yes	Brassicaceae[j]	E	32[o]	4	–[q]	362	0·4	0·7	1·5	599	O	L	FC:PI
1301a	*Lepidium latifolium* L.	Yes	Brassicaceae[j]	E	40	–[p]	–[q]	1,017	1·0	2·1	4·2	599	O	L	FC:PI
1302a	*Lepidium sativum* L.	–[m]	Brassicaceae[j]	E	24	3	A	–[t]	–[t]	1·2	2·3	509	O	–[w]	FC:PI
1303a	*Lepidium virginicum* L.	–[m]	Brassicaceae[j]	E	32	4	–[q]	326	0·3	0·7	1·3	509	O	–[w]	FC:PI
1304a	*Lepidolopsis turkestanica* (Regel & Schmalh.) Poljakov	Yes	Asteraceae[j]	E	18[o]	2	P	5,447	5·6	11·1	22·3	521	O	*Petunia*[e]	FC:PI
1305a	*Leptocereus quadricostatus* Britton & Rose	Yes	Cactaceae	E	22	2	P	778	0·8	1·6	3·2	557	O	G[c]	FC:PI
1306a	*Leucanthemella linearis* Matsum.	No	Asteraceae[j]	E	18	2	A	19,760	20·2	40·4	80·8	570	O	A[c]	FC:PI
1307a	*Lilium bosniacum* (Beck) Beck ex Fritsch	Yes	Liliaceae	M	24	2	P	33,169	33·9	67·8	135·7	475	O	A[c]	FC:PI
1308b	*Lilium carniolicum* Bernh.	Yes	Liliaceae	M	24	2	P	32,944	33·7	67·4	134·7	480	O	A[c]	FC:PI
1309b	*Lilium longiflorum* Thunb. cv. Nellie White	No	Liliaceae	M	24	2	P	35,827	36·6	73·3	146·5	570	O	A[c]	FC:PI
1310a	*Lilium pomponium* L.	Yes	Liliaceae	M	24	2	P	34,357	35·1	70·3	140·5	480	O	A[c]	FC:PI
1311b	*Lilium pyrenaicum* Gouan	Yes	Liliaceae	M	24	2	P	33,125	33·9	67·7	135·5	480	O	A[c]	FC:PI

1312a	*Limonium angustifolium* (Tauch) Degen	Yes	Plumbaginaceae	E	36[o]	4	P	2,474	2·5	5·1	10·1	580	O	G[c]	CIA
1313a	*Limonium fruticans* (Webb) Kuntze	–[m]	Plumbaginaceae	E	14[o]	2	P	4,675	4·8	9·6	19·1	552	O	H[c]	FC:PI
1314a	*Limonium macrophyllum* (Brouss.) O.Kuntze	–[m]	Plumbaginaceae	E	14	2	P	5,330	5·5	10·9	21·8	477	O	G[c]	FC:PI
1315a	*Limonium pectinatum* (Ait.) O.Kuntze var. *pectinatum*	–[m]	Plumbaginaceae	E	12[o]	2	P	2,557	2·6	5·2	10·5	477	O	G[c]	FC:PI
1316a	*Lobularia canariensis* (Webb) Borgen subsp. *palmensis*	–[m]	Brassicaceae[j]	E	22[o]	2	P	553	0·6	1·1	2·3	477	O	*Solan.*[e]	FC:PI
1317a	*Lobularia libyaca* Meisn.	Yes	Brassicaceae[j]	E	22	–[p]	–[q]	518	0·5	1·1	2·1	599	O	L	FC:PI
1318a	*Lolium multiflorum* Lam.	–[m]	Poaceae[j]	M	14[o]	2	P	2,661	2·7	5·4	10·9	555	O	G[c]	FC:PI
1319a	*Lolium perenne* L.	–[m]	Poaceae[j]	M	14[o]	2	P	2,695	2·8	5·5	11·0	555	O	G[c]	FC:PI
1320a	*Lolium rigidum* Gaudin	–[m]	Poaceae[j]	M	14[o]	2	P	2,687	2·7	5·5	11·0	555	O	G[c]	FC:PI
1321a	*Lolium temulentum* L.	–[m]	Poaceae[j]	M	14[o]	2	P	2,796	2·9	5·7	11·4	555	O	G[c]	FC:PI
1322c	*Lonicera periclymenum* L. subsp. *hispanica* (Boiss. & Reuter) Nyman	Yes	Caprifoliaceae	E	–[n]	–[p]	P	2,748	2·8	5·6	11·2	489	O	–[w]	FC:EB
1323a	*Lotus berthelotii* Masf.	–[m]	Fabaceae[j]	E	28[o]	4	P	1,193	1·2	2·4	4·9	552	O	*Solan.*[e]	FC:PI
1324a	*Lotus campylocladus* Webb & Berth.	–[m]	Fabaceae[j]	E	14	2	P	606	0·6	1·2	2·5	477	O	*Solan.*[e]	FC:PI
1325a	*Lotus dumetorum* Webb ex Murr.	–[m]	Fabaceae[j]	E	14	2	P	597	0·6	1·2	2·4	477	O	*Solan.*[e]	FC:PI
1326a	*Lotus glaucus* Dryand. in Aiton	–[m]	Fabaceae[j]	E	14[o]	2	P	606	0·6	1·2	2·5	552	O	*Solan.*[e]	FC:PI
1327a	*Lotus glaucus* Ait.	–[m]	Fabaceae[j]	E	28	4	P	1,213	1·2	2·5	5·0	477	O	*Solan.*[e]	FC:PI
1328a	*Lotus mascaënsis* Burchard	–[m]	Fabaceae[j]	E	28[o]	4	P	1,218	1·2	2·5	5·0	552	O	*Solan.*[e]	FC:PI
1329a	*Lotus sessilifolius* DC.	–[m]	Fabaceae[j]	E	28[o]	4	P	1,232	1·3	2·5	5·0	552	O	*Solan.*[e]	FC:PI
1330a	*Lugoa revoluta* (Chr. Sm. in Buch) DC.	–[m]	Asteraceae[j]	E	18	2	P	5,839	6·0	11·9	23·9	477	O	G[c]	FC:PI
1331a	*Lupinus albicaulis* Dougl. ex Hook.	No	Fabaceae[j]	E	48[o]	–[p]	P	1,311	1·3	2·7	5·4	524	O	G[c]	FC:PI
1332a	*Lupinus albifrons* Benth.	No	Fabaceae[j]	E	–[n]	–[p]	P	724	0·7	1·5	3·0	524	O	H[c]	FC:PI
1333c	*Lupinus albus* L.	No	Fabaceae[j]	E	50[o]	2	A	567	0·6	1·2	2·3	520	O	*Petunia*[e]	FC:PI
1334c	*Lupinus angustifolius* L.	No	Fabaceae[j]	E	40[o]	2	A	924	0·9	1·9	3·8	520	O	*Petunia*[e]	FC:PI
1335b	*Lupinus arboreus* Sims	No	Fabaceae[j]	E	48[o]	–[p]	P	851	0·9	1·7	3·5	524	O	*Petunia*[e]	FC:PI
1336a	*Lupinus arbustus* Douglas ex Lindl.	No	Fabaceae[j]	E	–[n]	–[p]	P	680	0·7	1·4	2·8	524	O	H[c]	FC:PI
1337a	*Lupinus argenteus* Pursh var. *rubricaulis* (Greene) S.L.Welsh	No	Fabaceae[j]	E	48[o]	–[p]	P	680	0·7	1·4	2·8	524	O	H[c]	FC:PI
1338a	*Lupinus arizonicus* (S.Watson) S.Watson	No	Fabaceae[j]	E	–[n]	–[p]	A	621	0·6	1·3	2·5	524	O	H[c]	FC:PI
1339a	*Lupinus atlanticus* Gladst.	No	Fabaceae[j]	E	38[o]	2	A	787	0·8	1·6	3·2	520	O	*Petunia*[e]	FC:PI
1340a	*Lupinus bandelierae* C.P.Sm.	No	Fabaceae[j]	E	36[o]	–[p]	P	675	0·7	1·4	2·8	524	O	*Petunia*[e]	FC:PI
1341a	*Lupinus bracteolaris* Desr.	No	Fabaceae[j]	E	32[o]	–[p]	A	758	0·8	1·6	3·1	524	O	*Petunia*[e]	FC:PI
1341b	*Lupinus bracteolaris* Desr.	No	Fabaceae[j]	E	34[o]	–[p]	A	778	0·8	1·6	3·2	524	O	*Petunia*[e]	FC:PI
1342a	*Lupinus concinnus* J.Agardh	No	Fabaceae[j]	E	–[n]	–[p]	A	553	0·6	1·1	2·3	524	O	*Petunia*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
1343a	*Lupinus cosentinii* Guss.	No	Fabaceae[j]	E	32[o]	2	A	694	0·7	1·4	2·8	520	O	*Petunia*[e]	FC:PI
1344a	*Lupinus cryptanthus* Shuttlew.	No	Fabaceae[j]	E	40[o]	2	A	910	0·9	1·9	3·7	520	O	*Petunia*[e]	FC:PI
1345a	*Lupinus digitatus* Forssk.	No	Fabaceae[j]	E	36[o]	2	A	670	0·7	1·4	2·7	520	O	*Petunia*[e]	FC:PI
1346a	*Lupinus garfieldensis* C.P.Sm.	No	Fabaceae[j]	E	–[n]	–[p]	–[q]	689	0·7	1·4	2·8	524	O	H[c]	FC:PI
1347a	*Lupinus graecus* Boiss. & Sprun.	No	Fabaceae[j]	E	50[o]	2	A	553	0·6	1·1	2·3	520	O	*Petunia*[e]	FC:PI
1348a	*Lupinus guaraniticus* (Hassl.) C.P.Sm.[i]	No	Fabaceae[j]	E	36[o]	–[p]	P	846	0·9	1·7	3·5	524	O	*Petunia*[e]	FC:PI
1349b	*Lupinus hispanicus* Boiss. & Reut. subsp. *bicolor* (Merino) Gladst.	No	Fabaceae[j]	E	52[o]	2	A	1,046	1·1	2·1	4·3	520	O	*Petunia*[e]	FC:PI
1349c	*Lupinus hispanicus* Boiss. & Reut. subsp. *hispanicus*	No	Fabaceae[j]	E	52[o]	2	A	1,051	1·1	2·2	4·3	520	O	*Petunia*[e]	FC:PI
1350a	*Lupinus lanatus* Benth.[i]	No	Fabaceae[j]	E	36[o]	–[p]	P	885	0·9	1·8	3·6	524	O	*Petunia*[e]	FC:PI
1351a	*Lupinus latifolius* Lindl. ex J.Agardh	No	Fabaceae[j]	E	–[n]	–[p]	P	851	0·9	1·7	3·5	524	O	*Petunia*[e]	FC:PI
1352a	*Lupinus lepidus* Douglas ex Lindl.	No	Fabaceae[j]	E	48[o]	–[p]	P	826	0·8	1·7	3·4	524	O	H[c]	FC:PI
1353a	*Lupinus leucophyllus* Douglas ex Lindl.	No	Fabaceae[j]	E	–[n]	–[p]	P	694	0·7	1·4	2·8	524	O	H[c]	FC:PI
1354a	*Lupinus linearis* Desr.	No	Fabaceae[j]	E	32[o]	–[p]	A	694	0·7	1·4	2·8	524	O	*Petunia*[e]	FC:PI
1354b	*Lupinus linearis* Desr.	No	Fabaceae[j]	E	34[o]	–[p]	A	699	0·7	1·4	2·9	524	O	*Petunia*[e]	FC:PI
1355a	*Lupinus linifolius* Roth.	No	Fabaceae[j]	E	40[o]	2	A	919	0·9	1·9	3·8	520	O	*Petunia*[e]	FC:PI
1356a	*Lupinus luteolus* Kellogg	No	Fabaceae[j]	E	–[n]	–[p]	–[q]	572	0·6	1·2	2·3	524	O	H[c]	FC:PI
1357c	*Lupinus luteus* L.	No	Fabaceae[j]	E	52[o]	2	A	1,193	1·2	2·4	4·9	520	O	*Lupinus ang.*[e]	FC:PI
1358a	*Lupinus magnistipulatus* Planchuelo & Dunn	No	Fabaceae[j]	E	36[o]	–[p]	P	914	0·9	1·9	3·7	524	O	*Petunia*[e]	FC:PI
1359a	*Lupinus mexicanus* Cerv. ex Lag.	No	Fabaceae[j]	E	48[o]	–[p]	P	978	1·0	2·0	4·0	524	O	*Petunia*[e]	FC:PI
1360a	*Lupinus micranthus* Guss.	No	Fabaceae[j]	E	52[o]	2	A	479	0·5	1·0	2·0	520	O	*Petunia*[e]	FC:PI
1361a	*Lupinus microcarpus* Sims var. *densiflorus* (Benth.) Jeps.	No	Fabaceae[j]	E	–[n]	–[p]	A	557	0·6	1·1	2·3	524	O	*Petunia*[e]	FC:PI
1362a	*Lupinus multiflorus* Desr.	No	Fabaceae[j]	E	36 + 0-1B[o]	–[p]	P	910	0·9	1·9	3·7	524	O	H[c]	FC:PI
1363a	*Lupinus mutabilis* Sweet	No	Fabaceae[j]	E	48[o]	2	AP	929	1·0	1·9	3·8	520	O	*Petunia*[e]	FC:PI
1363b	*Lupinus mutabilis* Sweet	No	Fabaceae[j]	E	48[o]	–[p]	AP	929	1·0	1·9	3·8	524	O	*Petunia*[e]	FC:PI
1364a	*Lupinus nanus* Douglas ex Benth.	No	Fabaceae[j]	E	48[o]	–[p]	A	533	0·5	1·1	2·2	524	O	*Petunia*[e]	FC:PI
1365a	*Lupinus palaestinus* Boiss.	No	Fabaceae[j]	E	42[o]	2	A	680	0·7	1·4	2·8	520	O	*Petunia*[e]	FC:PI
1366d	*Lupinus pilosus* Murr.	No	Fabaceae[j]	E	42[o]	2	A	665	0·7	1·4	2·7	520	O	*Petunia*[e]	FC:PI
1367a	*Lupinus polyphyllus* C.E.Anderson	No	Fabaceae[j]	E	48[o]	–[p]	P	831	0·9	1·7	3·4	524	O	*Petunia*[e]	FC:PI
1368a	*Lupinus princei* Harms	No	Fabaceae[j]	E	38[o]	2	A	474	0·5	1·0	1·9	520	O	*Petunia*[e]	FC:PI
1369a	*Lupinus pusillus* Pursh	No	Fabaceae[j]	E	48[o]	–[p]	A	528	0·5	1·1	2·2	524	O	*Petunia*[e]	FC:PI

1370a	*Lupinus reitzii* Burkart ex M.Pinheiro & Miotto[i]	No	Fabaceae[j]	E	36[o]	–[p]	B	934	1·0	1·9	3·8	524	O	*Petunia*[e]	FC:PI
1371a	*Lupinus rivularis* Douglas ex Lindl.	No	Fabaceae[j]	E	–[n]	–[p]	P	861	0·9	1·8	3·5	524	O	*Petunia*[e]	FC:PI
1372a	*Lupinus semperflorens* Hartw. ex Benth.	No	Fabaceae[j]	E	48[o]	–[p]	P	880	0·9	1·8	3·6	524	O	*Petunia*[e]	FC:PI
1373a	*Lupinus sericeus* Cooper	No	Fabaceae[j]	E	48[o]	–[p]	P	704	0·7	1·4	2·9	524	O	H[c]	FC:PI
1374a	*Lupinus termis* Forsk.	No	Fabaceae[j]	E	50[o]	2	A	557	0·6	1·1	2·3	520	O	*Petunia*[e]	FC:PI
1375a	*Lupinus texensis* Hook.	No	Fabaceae	E	36[o]	–[p]	A	1,193	1·2	2·4	4·9	511	O	L	FC:PI
1375b	*Lupinus texensis* Hook.	No	Fabaceae[j]	E	36[o]	–[p]	A	1,154	1·2	2·4	4·7	524	O	G[c]	FC:PI
1376a	*Lupinus variicolor* Steud.	No	Fabaceae[j]	E	–[n]	–[p]	P	817	0·8	1·7	3·3	524	O	*Petunia*[e]	FC:PI
1377a	*Lupinus vavilovi* Atab. & Maiss.	No	Fabaceae[j]	E	50[o]	2	A	557	0·6	1·1	2·3	520	O	*Petunia*[e]	FC:PI
1378a	*Luzula alpina* Hoppe	Yes	Juncaceae	M	36	4[u]	P	1,007	1·0	2·1	4·1	572	O	G[c]	CIA
1379a	*Luzula campestris* (L.) DC. subsp. *campestris*	Yes	Juncaceae	M	12	2[u]	P	474	0·5	1·0	1·9	572	O	G[c]	CIA
1380e	*Luzula canariensis* Poir.	–[m]	Juncaceae	M	12[o]	2[u]	P	465	0·5	1·0	1·9	552	O	*Raphanus*[e]	FC:PI
1381a	*Luzula divulgata* Kirschner	Yes	Juncaceae	M	24	4[u]	P	1,022	1·0	2·1	4·2	572	O	G[c]	CIA
1382a	*Luzula divulgatiformis* Bačič & Jogan	Yes	Juncaceae	M	24	2[u]	P	406	0·4	0·8	1·7	572	O	G[c]	CIA
1383a	*Luzula exspectata* Bačič & Jogan	Yes	Juncaceae	M	24	2[u]	P	469	0·5	1·0	1·9	572	O	G[c]	CIA
1384e	*Luzula luzuloides* (Lam.) Dandy & Wild.	No	Juncaceae	M	–[n]	–[u]	P	775	0·8	1·6	3·2	512	O	*Trifolium*[e]	FC:PI
1384f	*Luzula luzuloides* Lam. Dandy & Wilmott[ax]	No	Juncaceae	M	12	2[u]	P	488	0·5	1·0	2·0	576	R	–[ax]	Fe
1385a	*Luzula multiflora* (Ehrh.) Lej. subsp. *multiflora*	Yes	Juncaceae	M	24	4[u]	P	919	0·9	1·9	3·8	572	O	G[c]	CIA
1386a	*Luzula multiflora* (Ehrh.) Lej. subsp. *multiflora*	Yes	Juncaceae	M	36	6[u]	P	1,335	1·4	2·7	5·5	572	O	G[c]	CIA
1386b	*Luzula multiflora* (Retz.) Lej.	No	Juncaceae	M	–[n]	–[u]	P	1,484	1·5	3·0	6·1	512	O	*Trifolium*[e]	FC:PI
1386c	*Luzula multiflora* (Retz.) Lej.[ax]	No	Juncaceae	M	36	6[u]	P	958	1·0	2·0	3·9	576	R	–[ax]	Fe
1387e	*Luzula nivea* Lam. ex DC.	No	Juncaceae	M	–[n]	–[u]	P	766	0·8	1·6	3·1	512	O	*Trifolium*[e]	FC:PI
1388a	*Luzula pallescens* Swartz[ax]	No	Juncaceae	M	12	2[u]	P	424	0·4	0·9	1·7	576	R	–[ax]	Fe
1389b	*Luzula pilosa* (L.) Willd.[ax]	No	Juncaceae	M	66	–[u]	P	258	0·3	0·5	1·1	576	R	–[ax]	Fe
1390a	*Luzula sudetica* (Willd.) Schult.	Yes	Juncaceae	M	48	2[u]	P	445	0·5	0·9	1·8	572	O	G[c]	CIA
1391a	*Lycium chilense* Miers ex Bertero var. *vergarae* (Phil.) Bernardello	Yes	Solanaceae	E	24	2	P	1,736	1·8	3·6	7·1	487	O	H[c]	Fe
1391b	*Lycium chilense* Miers ex Bertero var. *minutifolium* (Miers) Barkley	Yes	Solanaceae	E	24	2	P	1,800	1·8	3·7	7·4	487	O	H[c]	Fe
1392a	*Lycium chilense* Miers ex Bertero var. *chilense*	Yes	Solanaceae	E	48	4	P	3,179	3·3	6·5	13·0	487	O	H[c]	Fe
1392b	*Lycium chilense* Miers ex Bertero var. *confertifolium* (Miers) Barkley	Yes	Solanaceae	E	48	4	P	3,227	3·3	6·6	13·2	487	O	H[c]	Fe

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount[†]	Standard species*[b1]	Method[††]
1392c	*Lycium chilense* Miers ex Bertero var. *descolei* Barkley	Yes	Solanaceae	E	48	4	P	3,213	3·3	6·6	13·1	487	O	H[c]	Fe
1393a	*Lycium elongatum* Miers	Yes	Solanaceae	E	24	2	P	1,575	1·6	3·2	6·4	487	O	H[c]	Fe
1394a	*Lycium infaustum* Miers	Yes	Solanaceae	E	24	2	P	1,878	1·9	3·8	7·7	487	O	H[c]	Fe
1395b	*Lycopersicon pimpinellifolium* (Jussl.) Mill.	Yes	Solanaceae	E	–[n]	–[p]	A	1,120	1·1	2·3	4·6	492	O	*Glycine*[e]	FC:PI
1396a	*Madhuca longifolia* (Koenig) Macbr. var. *latifolia* (Roxb.) Chevalier	No	Sapotaceae	E	–[n]	–[p]	P	966	1·0	2·0	4·0	501[ag]	O	B[c]	Fe
1397a	*Magnolia grandiflora* L.	Yes	Magnoliaceae	BA	–[n]	–[p]	P	4,430	4·5	9·1	18·1	489	O	–[w]	FC:EB
1398a	*Maireana decalvans* (Grand.) Paul G.Wilson	–[m]	Amaranthaceae	E	–[n]	–[p]	–[q]	1,394	1·4	2·9	5·7	526	O	A	FC:PI
1399a	*Malcolmia africana* (L.) R.Br.	Yes	Brassicaceae[j]	E	28	–[p]	–[q]	391	0·4	0·8	1·6	599	O	L	FC:PI
1400a	*Malcolmia flexuosa* Sibth. & Sm.	Yes	Brassicaceae[j]	E	16	2	–[q]	254	0·3	0·5	1·0	599	O	L	FC:PI
1401a	*Malcolmia nana* (DC.) Boiss.	Yes	Brassicaceae[j]	E	26	–[p]	–[q]	225	0·2	0·5	0·9	599	O	L	FC:PI
1402d	*Mangifera indica* L.	No	Anacardiaceae	E	–[n]	–[p]	P	880	0·9	1·8	3·6	501[ag]	O	B[c]	Fe
1403a	*Marcetella moquiniana* (Webb & Berthel.) Svent.	–[m]	Rosaceae	E	28[o]	4	P	381	0·4	0·8	1·6	552	O	*Raphanus*[e]	FC:PI
1404a	*Matthiola chorassanica* Bunge	Yes	Brassicaceae[j]	E	12	2	–[q]	1,682	1·7	3·4	6·9	599	O	L	FC:PI
1405a	*Matthiola fruticulosa* Maire	Yes	Brassicaceae[j]	E	12	2	–[q]	1,565	1·6	3·2	6·4	599	O	L	FC:PI
1406a	*Matthiola incana* (L.) R.Br.	Yes	Brassicaceae[j]	E	14	2	–[q]	2,064	2·1	4·2	8·4	599	O	L	FC:PI
1407a	*Matthiola maderensis* Lowe	Yes	Brassicaceae[j]	E	14	2	P	2,240	2·3	4·6	9·2	599	O	L	FC:PI
1407b	*Matthiola maderensis* Lowe	–[m]	Brassicaceae[j]	E	14[o]	2	P	2,357	2·4	4·8	9·6	552	O	H[c]	FC:PI
1408a	*Matthiola sinuata* R.Br.	Yes	Brassicaceae[j]	E	14	2	–[q]	2,201	2·3	4·5	9·0	599	O	L	FC:PI
1409a	*Mausolea eriocarpa* (Bunge) Poljakov	Yes	Asteraceae[j]	E	36[o]	2	P	6,743	6·9	13·8	27·6	521	O	G[c]	FC:PI
1410a	*Medicago sativa* L. subsp. *quasifalcata*	No	Fabaceae[j]	E	16[o]	2	P	841	0·9	1·7	3·4	611	O	*Petunia*[e]	FC:EB
1410b	*Medicago sativa* L. subsp. *caerulea*	No	Fabaceae[j]	E	16[o]	2	P	880	0·9	1·8	3·6	611	O	*Petunia*[e]	FC:EB
1411d	*Medicago sativa* L. subsp. *sativa* cv. Europe[h]	No	Fabaceae[j]	E	32[o]	4	P	1,628	1·7	3·3	6·7	611	O	*Petunia*[e]	FC:EB
1411e	*Medicago sativa* L. subsp. *sativa* cv. Nagyszenas[h]	No	Fabaceae[j]	E	32[o]	4	P	1,692	1·7	3·5	6·9	611	O	*Petunia*[e]	FC:EB

1412d	*Medicago truncatula* Gaertn. ecotype 108-1[h]	No	Fabaceae[j]	E	16[o]	2	A	479	0·5	1·0	2·0	611	O	*Petunia*[e]	FC:EB
1412e	*Medicago truncatula* Gaertn. cv. Jemalong[h]	No	Fabaceae[j]	E	16[o]	2	A	562	0·6	1·2	2·3	611	O	*Petunia*[e]	FC:EB
1413a	*Medusagyne oppositifolia* Baker	No	Ochnaceae	E	–[n]	–[p]	P	325	0·3	0·7	1·3	612	O	*Solan.*[e]	FC:PI
1414a	*Melaleuca quinquenervia* (Cav.) S.T.Blake	–[m]	Myrtaceae	E	–[n]	–[p]	P	949	1·0	1·9	3·9	526	O	A	FC:PI
1415a	*Mercurialis annua* L.[i]	No	Euphorbiaceae	E	16	2	A	648	0·7	1·3	2·7	544	O	*Solan.*[e]	FC:PI
1416a	*Mercurialis annua* L.[i]	No	Euphorbiaceae	E	32	4	A	1,269	1·3	2·6	5·2	544	O	*Solan.*[e]	FC:PI
1417a	*Mercurialis annua* L.[i]	No	Euphorbiaceae	E	56	6	A	1,907	2·0	3·9	7·8	544	O	*Solan.*[e]	FC:PI
1418a	*Mercurialis canariensis* D.J.Obbard & S.A.Harris[i]	No	Euphorbiaceae	E	32	4	A	1,579	1·6	3·2	6·5	544	O	*Solan.*[e]	FC:PI
1419a	*Mercurialis huetii* Hanry.[i]	No	Euphorbiaceae	E	16	2	A	699	0·7	1·4	2·9	544	O	*Solan.*[e]	FC:PI
1420a	*Mespilus canescens* J.B.Phipps[i]	Yes	Rosaceae	E	–[n]	3[z]	P	–[t]	–[t]	2·3	4·6	527	O	G[c]	FC:PI
1421b	*Mespilus germanica* L.	Yes	Rosaceae	E	–[n]	–[p]	P	753	0·8	1·5	3·1	489	O	–[w]	FC:EB
1421c	*Mespilus germanica* L.[i]	Yes	Rosaceae	E	–[n]	2[z]	P	680	0·7	1·4	2·8	527	O	G[c]	FC:PI
1421d	*Mespilus germanica* L.[i]	Yes	Rosaceae	E	–[n]	2-3[z]	P	846	0·9	1·7	3·5	527	O	G[c]	FC:PI
1422a	*Microlaena avenacea* (Raoul) Hook.f.	Yes	Poaceae[j]	M	48[o]	4	P	1,663	1·7	3·4	6·8	528	O	–[w]	FC:PI
1423a	*Microlaena carsei* Cheeseman	Yes	Poaceae[j]	M	48[o]	4	P	1,589	1·6	3·3	6·5	528	O	–[w]	FC:PI
1424a	*Microlaena polynoda* (Hook.f.) Hook.f.	Yes	Poaceae[j]	M	48[o]	4	P	1,159	1·2	2·4	4·7	528	O	–[w]	FC:PI
1425a	*Microlaena stipoides* (Labill.) R.Br.[i]	Yes	Poaceae[j]	M	48	4	P	895	0·9	1·8	3·7	528	O	–[w]	FC:PI
1426a	*Micromeria glomerata* Pérez	–[m]	Lamiaceae[j]	E	–[n]	–[p]	P	430	0·4	0·9	1·8	477	O	*Raphanus*[e]	FC:PI
1427a	*Micromeria herpyllomorpha* Webb & Berth.	–[m]	Lamiaceae[j]	E	–[n]	≥2	P	372	0·4	0·8	1·5	477	O	*Raphanus*[e]	FC:PI
1428a	*Micromeria hyssopifolia* Webb & Berth. var. *hyssopifolia*	–[m]	Lamiaceae[j]	E	–[n]	≥2	P	352	0·4	0·7	1·4	477	O	*Raphanus*[e]	FC:PI
1429a	*Micromeria lachnophylla* Webb & Berth.	–[m]	Lamiaceae[j]	E	30	≥2	P	362	0·4	0·7	1·5	477	O	*Raphanus*[e]	FC:PI
1430a	*Micromeria varia* Bentham subsp. *varia*	–[m]	Lamiaceae[j]	E	30[o]	≥2	P	367	0·4	0·8	1·5	477	O	*Raphanus*[e]	FC:PI
1431a	*Millettia tetraptera* Kurz	No	Fabaceae[j]	E	–[n]	–[p]	P	1,731	1·8	3·5	7·1	501[ag]	O	B[c]	Fe
1432a	*Miltonia phymatochila* (Lindl.) N.H.Williams & M.W.Chase	Yes	Orchidaceae	M	–[n]	–[p]	P	5,604	5·7	11·5	22·9	504[ah]	O	F	Fe
1433a	*Mitragyna parviflora* (Roxb.) Korth.	No	Rubiaceae	E	44[o]	4	P	949	1·0	1·9	3·9	501[ag]	O	B[c]	Fe
1434a	*Mitriostigma axillaris* Hochst.	No	Rubiaceae	E	22[o]	2	P	890	0·9	1·8	3·6	501[ag]	O	B[c]	Fe
1435b	*Momordica charantia* L.	Yes	Cucurbitaceae	E	–[n]	–[p]	P	699	0·7	1·4	2·9	492	O	*Raphanus*[e]	FC:PI
1436a	*Monanthes anagensis* Praeger	–[m]	Crassulaceae	E	c. 72[o]	8	P	880	0·9	1·8	3·6	552	O	*Solan.*[e]	FC:PI
1437a	*Monanthes brachycaulos* (Webb in Webb & Berthel.) Lowe	–[m]	Crassulaceae	E	36[o]	4	P	719	0·7	1·5	2·9	552	O	*Solan.*[e]	FC:PI

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
1438a	*Monanthes laxiflora* (DC.) Bolle	–[m]	Crassulaceae	E	36[o]	4	P	655	0·7	1·3	2·7	552	O	*Solan.*[e]	FC:PI
1439a	*Monanthes muralis* (Webb ex Bolle) Hook.f.	–[m]	Crassulaceae	E	36[o]	4	P	499	0·5	1·0	2·0	552	O	*Solan.*[e]	FC:PI
1440a	*Monanthes polyphylla* Haw. subsp. *polyphylla*	–[m]	Crassulaceae	E	36[o]	4	P	636	0·7	1·3	2·6	552	O	*Solan.*[e]	FC:PI
1441a	*Moricandia arvensis* (L.) DC.	Yes	Brassicaceae[j]	E	28	–[p]	–[q]	636	0·7	1·3	2·6	599	O	L	FC:PI
1442a	*Morinda pubescens* S.M.	No	Rubiaceae	E	–[n]	–[p]	P	601	0·6	1·2	2·5	501[ag]	O	B[c]	Fe
1443a	*Morisia monanthos* (Viv.) Asch.	No	Brassicaceae[j]	E	14	2	P	772	0·8	1·6	3·2	602	O	*Solan.*[e]	FC:PI
1444b	*Morus alba* L.	Yes	Moraceae	E	–[n]	–[p]	P	386	0·4	0·8	1·6	489	O	–[w]	FC:EB
1445l	*Musa acuminata* Colla subsp. *banksii* N.W.Simmonds	No	Musaceae	M	22	2	P	618	0·6	1·3	2·5	503	O	*Glycine*[e]	FC:PI
1446f	*Musa balbisiana* Colla type Cameroun	No	Musaceae	M	22	2	P	553	0·6	1·1	2·3	503	O	*Glycine*[e]	FC:PI
1447a	*Musa beccarii* N.W.Simmonds	No	Musaceae	M	18	2	P	763	0·8	1·6	3·1	503	O	*Glycine*[e]	FC:PI
1448a	*Musa laterita* Cheesman	No	Musaceae	M	22	2	P	597	0·6	1·2	2·4	503	O	*Glycine*[e]	FC:PI
1449a	*Musa maclayi* F.Muell. type Hung Si	No	Musaceae	M	20	2	P	722	0·7	1·5	3·0	503	O	*Glycine*[e]	FC:PI
1450a	*Musa mannii* H.Wendl. ex Baker	No	Musaceae	M	22	2	P	621	0·6	1·3	2·5	503	O	*Glycine*[e]	FC:PI
1451b	*Musa ornata* Roxb.	No	Musaceae	M	22	2	P	635	0·6	1·3	2·6	503	O	*Glycine*[e]	FC:PI
1452a	*Musa peekelii* Lauterb. subsp. *peekelii* (N.W.Simmonds) Argent	No	Musaceae	M	20	2	P	756	0·8	1·5	3·1	503	O	*Glycine*[e]	FC:PI
1453b	*Musa schizocarpa* N.W.Simmonds	No	Musaceae	M	22	2	P	673	0·7	1·4	2·8	503	O	*Glycine*[e]	FC:PI
1454b	*Musa textilis* Née	No	Musaceae	M	20	2	P	702	0·7	1·4	2·9	503	O	*Glycine*[e]	FC:PI
1455a	*Musa velutina* Wendl. & Drude	No	Musaceae	M	22[o]	2	P	607	0·6	1·2	2·5	503	O	*Glycine*[e]	FC:PI
1456a	*Musschia aurea* (L.f.) DC.	–[m]	Campanulaceae	E	32[o]	4	P	494	0·5	1·0	2·0	552	O	*Solan.*[e]	FC:PI
1457a	*Myagrum perfoliatum* L.	Yes	Brassicaceae[j]	E	14	2	–[q]	284	0·3	0·6	1·2	599	O	L	FC:PI
1458a	*Mycelis muralis* (L.) Dum.	No	Asteraceae[j]	E	18	2	–[q]	1,956	2·0	4·0	8·0	608	O	*Lactuca*[e]	FC:DAPI
1459a	*Myzorrhiza californica* (Cham. & Schlecht.) Rydb. subsp. *californica*[an]	Yes	Orobanchaceae	E	48	4	P	2,109	2·2	4·3	8·6	531[an]	O	G[c]	CIA
1459b	*Myzorrhiza californica* (Cham. & Schlecht.) Rydb. subsp. *grandis*[an]	Yes	Orobanchaceae	E	48	4	P	2,473	2·5	5·1	10·1	531[an]	O	G[c]	CIA
1460a	*Myzorrhiza pinorum* (A.Gray) Rydb.[an]	Yes	Orobanchaceae	E	48	4	P	2,269	2·3	4·6	9·3	531[an]	O	G[c]	CIA

1461a	*Narcissus abscissus* (Haw.) Schult.f.	No	Amaryllidaceae	M	14[o]	2	P	12,910	13·2	26·4	52·8	581	O	*Agave* sp.[e]	FC:PI
1462a	*Narcissus assoanus* Dufour	No	Amaryllidaceae	M	14[o]	2	P	9,193	9·4	18·8	37·6	581	O	*Agave* sp.[e]	FC:PI
1463a	*Narcissus asturiensis* (Jord.) Pugsley	No	Amaryllidaceae	M	14[o]	2	P	11,834	12·1	24·2	48·4	581	O	*Agave* sp.[e]	FC:PI
1464a	*Narcissus blanchardii* Zonn.	No	Amaryllidaceae	M	28[z]	4[z]	P	25,037	25·6	51·2	102·4	581	O	*Agave* sp.[e]	FC:PI
1465a	*Narcissus broussonetii* Lag.	No	Amaryllidaceae	M	22[o]	2	P	18,289	18·7	37·4	74·8	581	O	*Agave* sp.[e]	FC:PI
1466a	*Narcissus bujei* Fern.Casas	No	Amaryllidaceae	M	14[z]	2[z]	P	14,670	15·0	30·0	60·0	581	O	*Agave* sp.[e]	FC:PI
1467a	*Narcissus bulbocodium* L.	No	Amaryllidaceae	M	14[o]	2	P	6,944	7·1	14·2	28·4	581	O	*Agave* sp.[e]	FC:PI
1468a	*Narcissus calcicola* Mendonca	No	Amaryllidaceae	M	14[o]	2	P	13,007	13·3	26·6	53·2	581	O	*Agave* sp.[e]	FC:PI
1469c	*Narcissus cantabricus* DC.	No	Amaryllidaceae	M	14[o]	2	P	7,091	7·3	14·5	29·0	581	O	*Agave* sp.[e]	FC:PI
1470a	*Narcissus cavanillesii* Barra & G.Lopez	No	Amaryllidaceae	M	28[o]	4	–[q]	16,284	16·7	33·3	66·6	581	O	*Agave* sp.[e]	FC:PI
1471a	*Narcissus cuatrecasasii* Fern. Casas, Lainz & Ruiz Rejon	No	Amaryllidaceae	M	14[o]	2	P	15,501	15·9	31·7	63·4	581	O	*Agave* sp.[e]	FC:PI
1472a	*Narcissus cyclamineus* DC.	No	Amaryllidaceae	M	14[o]	2	P	12,714	13·0	26·0	52·0	581	O	*Agave* sp.[e]	FC:PI
1473a	*Narcissus dubius* Gouan	No	Amaryllidaceae	M	50[o]	6	P	32,421	33·2	66·3	132·6	581	O	*Agave* sp.[e]	FC:PI
1474a	*Narcissus elegans* (Haw.) Spach	No	Amaryllidaceae	M	20[o]	2	P	14,768	15·1	30·2	60·4	581	O	*Agave* sp.[e]	FC:PI
1475a	*Narcissus gaditanus* Boiss. & Reuter	No	Amaryllidaceae	M	14[o]	2	P	9,438	9·7	19·3	38·6	581	O	*Agave* sp.[e]	FC:PI
1476c	*Narcissus hedraeanthus* (Webb & Heldr.) Colmeiro	No	Amaryllidaceae	M	14[o]	2	P	7,335	7·5	15·0	30·0	581	O	*Agave* sp.[e]	FC:PI
1477a	*Narcissus jacetanus* Fern. Casas	No	Amaryllidaceae	M	14[o]	2	P	10,905	11·2	22·3	44·6	581	O	*Agave* sp.[e]	FC:PI
1478a	*Narcissus jonquilla* L.	No	Amaryllidaceae	M	14[o]	2	P	16,039	16·4	32·8	65·6	581	O	*Agave* sp.[e]	FC:PI
1478b	*Narcissus jonquilla* L. subsp. *wilkommii* (A. Fern.) Zonn.	No	Amaryllidaceae	M	14[o]	2	P	16,235	16·6	33·2	66·4	581	O	*Agave* sp.[e]	FC:PI
1479a	*Narcissus longispathus* Pugsley	No	Amaryllidaceae	M	14[o]	2	P	17,604	18·0	36·0	72·0	581	O	*Agave* sp.[e]	FC:PI
1480a	*Narcissus lusitanicus* Dorda & Fern. Casas	No	Amaryllidaceae	M	14[o]	2	P	8,264	8·5	16·9	33·8	581	O	*Agave* sp.[e]	FC:PI
1481a	*Narcissus miniatus* Koop., Donnison-Morgan & Zonn.	No	Amaryllidaceae	M	30[o]	6	P	25,086	25·7	51·3	102·6	581	O	*Agave* sp.[e]	FC:PI
1482a	*Narcissus moleroi* Fern. & Casas	No	Amaryllidaceae	M	14[o]	2	P	12,763	13·1	26·1	52·2	581	O	*Agave* sp.[e]	FC:PI
1483a	*Narcissus nevadensis* Pugsley	No	Amaryllidaceae	M	14[o]	2	P	18,680	19·1	38·2	76·4	581	O	*Agave* sp.[e]	FC:PI
1484a	*Narcissus obesus* Salisbury	No	Amaryllidaceae	M	26[o]	2	P	12,959	13·3	26·5	53·0	581	O	*Agave* sp.[e]	FC:PI
1485a	*Narcissus pallidulus* Graells	No	Amaryllidaceae	M	14[o]	2	P	8,802	9·0	18·0	36·0	581	O	*Agave* sp.[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
1486a	*Narcissus papyraceus* Ker Gawl.	No	Amaryllidaceae	M	22[o]	2	P	16,479	16·9	33·7	67·4	581	O	*Agave* sp.[e]	FC:PI
1487b	*Narcissus poeticus* L.	No	Amaryllidaceae	M	14[o]	2	P	12,714	13·0	26·0	52·0	581	O	*Agave* sp.[e]	FC:PI
1488a	*Narcissus primigenius* Fern. Casas & Lainz	No	Amaryllidaceae	M	14[o]	2	P	10,611	10·9	21·7	43·4	581	O	*Agave* sp.[e]	FC:PI
1489a	*Narcissus pseudonarcissus* L.	No	Amaryllidaceae	M	14[o]	2	P	11,492	11·8	23·5	47·0	581	O	*Agave* sp.[e]	FC:PI
1489b	*Narcissus pseudonarcissus* L. subsp. *minor* (L.) Baker	No	Amaryllidaceae	M	14[o]	2	P	11,540	11·8	23·6	47·2	581	O	*Agave* sp.[e]	FC:PI
1490a	*Narcissus pseudonarcissus* L. subsp. *bicolor* (L.) Willk. & Lange	No	Amaryllidaceae	M	42[o]	6	P	33,105	33·9	67·7	135·4	581	O	*Agave* sp.[e]	FC:PI
1491a	*Narcissus romieuxii* Braun-Blanq. & Maire	No	Amaryllidaceae	M	28[o]	4	P	14,083	14·4	28·8	57·6	581	O	*Agave* sp.[e]	FC:PI
1492a	*Narcissus rupicola* Dufour	No	Amaryllidaceae	M	14[o]	2	P	13,007	13·3	26·6	53·2	581	O	*Agave* sp.[e]	FC:PI
1493a	*Narcissus scaberulus* Henriq.	No	Amaryllidaceae	M	14[o]	2	P	12,861	13·2	26·3	52·6	581	O	*Agave* sp.[e]	FC:PI
1494a	*Narcissus serotinus* L.	No	Amaryllidaceae	M	10[o]	2	P	10,171	10·4	20·8	41·6	581	O	*Agave* sp.[e]	FC:PI
1495a	*Narcissus tazetta* L.	No	Amaryllidaceae	M	20[o]	2	P	14,817	15·2	30·3	60·6	581	O	*Agave* sp.[e]	FC:PI
1496a	*Narcissus triandrus*. L.	No	Amaryllidaceae	M	14[o]	2	P	9,291	9·5	19·0	38·0	581	O	*Agave* sp.[e]	FC:PI
1497a	*Narcissus viridiflorus* Schousboe	No	Amaryllidaceae	M	28[o]	4	P	31,052	31·8	63·5	127·0	581	O	*Agave* sp.[e]	FC:PI
1498a	*Nauplius intermedius* Webb	–[m]	Asteraceae[j]	E	14[o]	2	P	841	0·9	1·7	3·4	552	O	*Glycine*[e]	FC:PI
1499a	*Nauplius sericeus* (L.f.) Cass.	–[m]	Asteraceae[j]	E	14	2	P	841	0·9	1·7	3·4	477	O	*Glycine*[e]	FC:PI
1500a	*Navia splendens* L.B.Sm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	694	0·7	1·4	2·8	575	O	*Raphanus*[e]	FC:PI
1501a	*Neochamaelea pulverulenta* (Vent.) Erdtman	–[m]	Rutaceae	E	36[o]	4	P	729	0·7	1·5	3·0	552	O	*Solan.*[e]	FC:PI
1502a	*Neopallasia pectinata* (Pall.) Poljakov	Yes	Asteraceae[j]	E	36	2	A	5,164	5·3	10·6	21·1	521	O	G[c]	FC:PI
1503a	*Neotorularia humilis* (C.A.Mey.) Hedge & J. Léonard	Yes	Brassicaceae[j]	E	28, 42, 56[o]	–[p]	–[q]	1,027	1·1	2·1	4·2	599	O	L	FC:PI
1504a	*Nepeta teydea* Webb & Berth.	–[m]	Lamiaceae[j]	E	16[o]	2	P	269	0·3	0·6	1·1	477	O	*Raphanus*[e]	FC:PI
1505a	*Nerine angustifolia* Baker[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	11,492	11·8	23·5	47·0	532[ao]	O	*Agave* sp.[e]	FC:PI
1506a	*Nerine appendiculata* Baker[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	11,149	11·4	22·8	45·6	532[ao]	O	*Agave* sp.[e]	FC:PI
1507a	*Nerine bowdenii* W.Watson[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	17,262	17·7	35·3	70·6	532[ao]	O	*Agave* sp.[e]	FC:PI
1508a	*Nerine duparquetiana* Baker	Yes	Amaryllidaceae	M	22[o]	2[z]	P	13,448	13·8	27·5	55·0	532	O	*Agave* sp.[e]	FC:PI

1509a	*Nerine filamentosa* W.F.Barker[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	9,633	9·9	19·7	39·4	532[ao]	O	*Agave* sp.[e]	FC:PI
1510a	*Nerine filifolia* Baker[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	11,540	11·8	23·6	47·2	532[ao]	O	*Agave* sp.[e]	FC:PI
1511a	*Nerine frithii* L.Bolus	Yes	Amaryllidaceae	M	22[o]	2[z]	P	11,296	11·6	23·1	46·2	532	O	*Agave* sp.[e]	FC:PI
1512a	*Nerine gaberonensis* Bremek. & Oberm.	Yes	Amaryllidaceae	M	22[o]	2[z]	P	8,802	9·0	18·0	36·0	532	O	*Agave* sp.[e]	FC:PI
1513a	*Nerine gibsonii* K.H.Douglas	Yes	Amaryllidaceae	M	22[o]	2[z]	P	10,758	11·0	22·0	44·0	532	O	*Agave* sp.[e]	FC:PI
1514a	*Nerine gracilis* R.A.Dyer[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	12,029	12·3	24·6	49·2	532[ao]	O	*Agave* sp.[e]	FC:PI
1515a	*Nerine humilis* (Jacq.) Herb.[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	12,372	12·7	25·3	50·6	532[ao]	O	*Agave* sp.[e]	FC:PI
1516a	*Nerine krigei* W.F.Barker[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	15,844	16·2	32·4	64·8	532[ao]	O	*Agave* sp.[e]	FC:PI
1517a	*Nerine laticoma* Schonland subsp. *huttoniae*[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	13,105	13·4	26·8	53·6	532[ao]	O	*Agave* sp.[e]	FC:PI
1517b	*Nerine laticoma* T.Durand & Schinz.[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	13,203	13·5	27·0	54·0	532[ao]	O	*Agave* sp.[e]	FC:PI
1518a	*Nerine marincowitzii* Snijman	Yes	Amaryllidaceae	M	22[o]	2[z]	P	9,144	9·4	18·7	37·4	532	O	*Agave* sp.[e]	FC:PI
1519a	*Nerine masoniorum* L.Bolus[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	11,100	11·4	22·7	45·4	532[ao]	O	*Agave* sp.[e]	FC:PI
1520a	*Nerine pancratioides* Baker	Yes	Amaryllidaceae	M	22[o]	2[z]	P	10,709	11·0	21·9	43·8	532	O	*Agave* sp.[e]	FC:PI
1521a	*Nerine platypetala* G.McNeil	Yes	Amaryllidaceae	M	22[o]	2[z]	P	10,905	11·2	22·3	44·6	532	O	*Agave* sp.[e]	FC:PI
1522a	*Nerine pudica* Hook.f.[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	12,812	13·1	26·2	52·4	532[ao]	O	*Agave* sp.[e]	FC:PI
1523a	*Nerine pusilla* Dinter	Yes	Amaryllidaceae	M	22[o]	2[z]	P	13,692	14·0	28·0	56·0	532	O	*Agave* sp.[e]	FC:PI
1524a	*Nerine rehmannii* (Baker) L.Bolus[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	8,802	9·0	18·0	36·0	532[ao]	O	*Agave* sp.[e]	FC:PI
1525a	*Nerine ridleyi* Phillips	Yes	Amaryllidaceae	M	22[o]	2[z]	P	12,812	13·1	26·2	52·4	532	O	*Agave* sp.[e]	FC:PI
1526a	*Nerine ridleyi* Phillips	Yes	Amaryllidaceae	M	33[o]	3[z]	P	–[t]	–[t]	39·5	79·0	532	O	*Agave* sp.[e]	FC:PI
1527a	*Nerine sarniensis* (L.) Herb.[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	12,665	13·0	25·9	51·8	532[ao]	O	*Agave* sp.[e]	FC:PI
1528a	*Nerine sarniensis* (L.) Herb.[h]	Yes	Amaryllidaceae	M	33[o]	3[z]	P	–[t]	–[t]	39·7	79·4	532[ao]	O	*Agave* sp.[e]	FC:PI
1529a	*Nerine undulata* (L.) Herb.[h]	Yes	Amaryllidaceae	M	22[o]	2[z]	P	13,888	14·2	28·4	56·8	532[ao]	O	*Agave* sp.[e]	FC:PI
1530a	*Neslia paniculata* (L.) Desv.	Yes	Brassicaceae[j]	E	14	2	–[q]	196	0·2	0·4	0·8	599	O	L	FC:PI
1531a	*Nicotiana arentsii* Goodsp.	–[m]	Solanaceae	E	48	4	P	4,944	5·1	10·1	20·2	566	O	G	FC:PI
1532a	*Nicotiana attenuata* Torrey ex S.Watson	–[m]	Solanaceae	E	24	2	A	2,428	2·5	5·0	9·9	566	O	G	FC:PI
1533a	*Nicotiana clevelandii* A.Gray	–[m]	Solanaceae	E	48	4	A	4,049	4·1	8·3	16·6	566	O	G	FC:PI
1534a	*Nicotiana glutinosa* L.	–[m]	Solanaceae	E	24	2	A	2,186	2·2	4·5	8·9	566	O	*Solan.*[e]	FC:PI
1535a	*Nicotiana knightiana* Goodsp.	–[m]	Solanaceae	E	24	2	A	3,090	3·2	6·3	12·6	566	O	G	FC:PI
1536a	*Nicotiana nesophila* I.M.Johnston	–[m]	Solanaceae	E	48	4	A	4,922	5·0	10·1	20·1	566	O	G	FC:PI
1537a	*Nicotiana nudicaulis* S.Watson	–[m]	Solanaceae	E	48	4	A	3,477	3·6	7·1	14·2	566	O	G	FC:PI
1538a	*Nicotiana obtusifolia* M.Martens & Galeotti	–[m]	Solanaceae	E	24	2	A	1,511	1·5	3·1	6·2	566	O	*Solan.*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
1539a	*Nicotiana paniculata* L.	–[m]	Solanaceae	E	24	2	A	2,880	2·9	5·9	11·8	566	O	G	FC:PI
1540a	*Nicotiana quadrivalvis* Pursh.	–[m]	Solanaceae	E	48	4	A	4,159	4·3	8·5	17·0	566	O	F	FC:PI
1541a	*Nicotiana repanda* Willd.	–[m]	Solanaceae	E	48	4	A	5,320	5·4	10·9	21·8	566	O	H	FC:PI
1542a	*Nicotiana rustica* L.	–[m]	Solanaceae	E	48	4	A	5,181	5·3	10·6	21·2	566	O	G	FC:PI
1543a	*Nicotiana stocktonii* Brandegee	–[m]	Solanaceae	E	48	4	A	4,888	5·0	10·0	20·0	566	O	G	FC:PI
1544a	*Nicotiana sylvestris* Speg. & Comes	–	Solanaceae	E	24	2	P	2,636	2·7	5·4	10·8	566	O	G	FC:PI
1545a	*Nicotiana tabacum* L.	–[m]	Solanaceae	E	48	4	A	5,061	5·2	10·4	20·7	566	O	G	Fe
1545m	*Nicotiana tabacum* L.	No	Solanaceae	E	–[n]	–[p]	A	4,778	4·9	9·8	19·5	492	O	C[c]	FC:PI
1546a	*Nicotiana tomentosiformis* Goodsp.	–[m]	Solanaceae	E	24	2	P	2,682	2·7	5·5	11·0	566	O	G	FC:PI
1547a	*Nicotiana undulata* Ruiz & Pav.	–[m]	Solanaceae	E	24	2	A	2,362	2·4	4·8	9·7	566	O	G	FC:PI
1548a	*Nicotiana wigandioides* Koch & Fintelm.	–[m]	Solanaceae	E	24	2	P	2,782	2·8	5·7	11·4	566	O	G	FC:PI
1549a	*Nipponanthemum nipponicum* (Franchet ex Maxim.) S.Kitamura	Yes	Asteraceae[j]	E	18	2	P	5,804	5·9	11·9	23·7	521	O	G[c]	FC:PI
1550a	*Noccaea alpestris* (Jacq.) Kuerguelen	Yes	Brassicaceae[j]	E	14	2	–[q]	235	0·2	0·5	1·0	599	O	L	FC:PI
1551a	*Nopalea cochenillifera* (L.) A.Lyons	Yes	Cactaceae	E	22	2	P	958	1·0	2·0	3·9	557	O	G[c]	FC:PI
1552a	*Notholirion thomsonianum* (Royle) Stapf.	Yes	Liliaceae	M	c. 24	2	P	34,499	35·3	70·6	141·1	565	O	B	Fe
1553b	*Notylia barkeri* Lindl.	Yes	Orchidaceae	M	–[n]	–[p]	P	1,076	1·1	2·2	4·4	504[ah]	O	–[w]	FC:DAPI
1554a	*Ocotea foetens* (Aiton) Baill.	–[m]	Lauraceae	BA	24[o]	4	P	1,169	1·2	2·4	4·8	552	O	*Solan.*[e]	FC:PI
1555a	*Olea cerasiformis* Rivas Mart. & Del Arco	Yes	Oleaceae	E	46[o]	2	P	1,462	1·5	3·0	6·0	588	O	G[c]	FC:PI
1556c	*Olea europaea* L.	No	Oleaceae	E	–[n]	–[p]	P	1,472	1·5	3·0	6·0	501[ag]	O	B[c]	Fe
1556d	*Olea europaea* L. subsp. *europaea*	No	Oleaceae	E	–[n]	–[p]	P	1,584	1·6	3·2	6·5	563	O	G[c]	FC:PI
1556e	*Olea europaea* L. subsp. *europaea* var. *sylvestris*	No	Oleaceae	E	46[o]	2	P	1,560	1·6	3·2	6·4	586	O	G[c]	FC:PI
1556f	*Olea europaea* L. subsp. *europaea* var. *europaea* cv. Santulhana[h]	No	Oleaceae	E	46[o]	2	P	1,501	1·5	3·1	6·1	586	O	G[c]	FC:PI
1556g	*Olea europaea* L. subsp. *europaea* var. *europaea* cv. Verdeal[h]	No	Oleaceae	E	46[o]	2	P	1,418	1·5	2·9	5·8	586	O	G[c]	FC:PI
1556h	*Olea europaea* L. subsp. *europaea* var. *europaea*	Yes	Oleaceae	E	46[o]	2	P	1,516	1·6	3·1	6·2	588	O	G[c]	FC:PI

1556i	*Olea europaea* L. subsp. *europaea* var. *sylvestris*	Yes	Oleaceae	E	46[o]	2	P	1,555	1·6	3·2	6·4	588	O	G[c]	FC:PI
1557a	*Olea maderensis* (Lowe) Rivas Mart. & Del Arco	Yes	Oleaceae	E	92[o]	4	P	2,919	3·0	6·0	11·9	588	O	G[c]	FC:PI
1558a	*Olearia pimeleoides* (D.C.) Benth.	–[m]	Asteraceae[j]	E	–[n]	–[p]	–[q]	5,990	6·1	12·3	24·5	526	O	A	FC:PI
1559a	*Olimarabidopsis cabulica* (Hook.f. & Thomson) Al-Shehbaz, O'Kane & R.A.Price	Yes	Brassicaceae[j]	E	48[o]	6	–[q]	518	0·5	1·1	2·1	599	O	L	FC:PI
1559b	*Olimarabidopsis cabulica* (J.D.Hooker & Thompson) Al-Shehbaz, O'Kane & R.A.Price	–[m]	Brassicaceae[j]	E	48[o]	–[p]	–[q]	411	0·4	0·8	1·7	509	O	–[w]	FC:PI
1560a	*Olimarabidopsis pumila* (Stephan) Al-Shehbaz, O'Kane & R.A.Price	Yes	Brassicaceae[j]	E	32	4	–[q]	342	0·4	0·7	1·4	599	O	L	FC:PI
1560b	*Olimarabidopsis pumila* (Stephan) Al-Shehbaz, O'Kane & R.A.Price	–[m]	Brassicaceae[j]	E	30	4?	–[q]	407	0·4	0·8	1·7	509	O	–[w]	FC:PI
1561b	*Oncidium leucochilum* Bateman	Yes	Orchidaceae	M	–[n]	–[p]	P	587	0·6	1·2	2·4	504[ah]	O	–[w]	FC:DAPI
1562a	*Oplismenus hirtellus* (R.Br.) U.Scholz subsp. *imbecillis*[i]	Yes	Poaceae[j]	M	54	6	P	2,577	2·6	5·3	10·5	528	O	–[w]	FC:PI
1563a	*Opuntia acaulis* Ekman & Werderm.	Yes	Cactaceae	E	–[n]	8	P	3,716	3·8	7·6	15·2	557	O	G[c]	FC:PI
1564a	*Opuntia dillenii* Haw.	Yes	Cactaceae	E	–[n]	6	P	2,225	2·3	4·6	9·1	557	O	G[c]	FC:PI
1565c	*Ornithogalum longibracteatum* Jacq.	No	Asparagaceae	M	–[n]	–[p]	P	7,744	7·9	15·8	31·7	518	O	C[c]	FC:PI
1566a	*Orobanche alba* Steph. ex Willd.[i]	Yes	Orobanchaceae	E	38	2	P	2,726	2·8	5·6	11·2	531	O	G[c]	CIA
1566b	*Orobanche alba* Steph. ex Willd.[i]	Yes	Orobanchaceae	E	38	2	P	3,101	3·2	6·3	12·7	531	O	G[c]	CIA
1567a	*Orobanche alsatica* Kirschl. subsp. *libanotidis*[i]	Yes	Orobanchaceae	E	38	2	P	2,550	2·6	5·2	10·4	531	O	G[c]	CIA
1568a	*Orobanche amethystea* Thuill.[i]	Yes	Orobanchaceae	E	38	2	P	1,756	1·8	3·6	7·2	531	O	G[c]	CIA
1568b	*Orobanche amethystea* Thuill.[i]	Yes	Orobanchaceae	E	38	2	P	2,164	2·2	4·4	8·9	531	O	G[c]	CIA
1569a	*Orobanche anatolica* Reut.[i]	Yes	Orobanchaceae	E	38	2	P	4,584	4·7	9·4	18·7	531	O	G[c]	CIA
1569b	*Orobanche anatolica* Reut.[i]	Yes	Orobanchaceae	E	38	2	P	5,320	5·4	10·9	21·8	531	O	G[c]	CIA
1570a	*Orobanche austrohispanica* M.J.Y.Foley	Yes	Orobanchaceae	E	76	4	P	1,848	1·9	3·8	7·6	531	O	G[c]	CIA
1571a	*Orobanche caryophyllacea* Sm.[i]	Yes	Orobanchaceae	E	38	2	P	3,485	3·6	7·1	14·3	531	O	G[c]	CIA
1572a	*Orobanche cernua* Loefl. var. *cumana*	Yes	Orobanchaceae	E	38	2	AP	1,418	1·5	2·9	5·8	531	O	G[c]	CIA

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
1572b	*Orobanche cernua* Loefl. var. *cernua*	Yes	Orobanchaceae	E	38	2	P	1,674	1·7	3·4	6·8	531	O	G[c]	CIA
1573a	*Orobanche crenata* Forsk.	Yes	Orobanchaceae	E	38	2	A	2,781	2·8	5·7	11·4	531	O	G[c]	CIA
1574a	*Orobanche densiflora* Salzm. ex Reut.[i, an]	Yes	Orobanchaceae	E	76	4	P	1,752	1·8	3·6	7·2	531[an]	O	G[c]	CIA
1574b	*Orobanche densiflora* Salzm. ex Reut.[i, an]	Yes	Orobanchaceae	E	76	4	P	2,152	2·2	4·4	8·8	531[an]	O	G[c]	CIA
1575a	*Orobanche gracilis* Sm.[i]	Yes	Orobanchaceae	E	76	4	P	1,621	1·7	3·3	6·6	531	O	G[c]	CIA
1575b	*Orobanche gracilis* Sm.[i]	Yes	Orobanchaceae	E	76	4	P	2,392	2·4	4·9	9·8	531	O	G[c]	CIA
1576a	*Orobanche gracilis* Sm.	Yes	Orobanchaceae	E	114	6	P	1,825	1·9	3·7	7·5	531	O	G[c]	CIA
1577a	*Orobanche grossheimii* Novopokr.	Yes	Orobanchaceae	E	38	2	P	3,466	3·5	7·1	14·2	531	O	G[c]	CIA
1578a	*Orobanche hederae* Duby	Yes	Orobanchaceae	E	38	2	P	2,275	2·3	4·7	9·3	531	O	G[c]	CIA
1579a	*Orobanche latisquama* (F.Schultz) Batt.[i]	Yes	Orobanchaceae	E	76	4	P	3,305	3·4	6·8	13·5	531	O	G[c]	CIA
1580a	*Orobanche lutea* Baumg.	Yes	Orobanchaceae	E	38	2	P	2,420	2·5	4·9	9·9	531	O	G[c]	CIA
1581a	*Orobanche minor* Sutt.[i]	Yes	Orobanchaceae	E	38	2	AP	1,789	1·8	3·7	7·3	531	O	G[c]	CIA
1581b	*Orobanche minor* Sutt.[i]	Yes	Orobanchaceae	E	38	2	AP	2,663	2·7	5·4	10·9	531	O	G[c]	CIA
1582a	*Orobanche owerinii* (G.Beck) G.Beck[i]	Yes	Orobanchaceae	E	38	2	P	3,112	3·2	6·4	12·7	531	O	G[c]	CIA
1583a	*Orobanche picridis* F.Schultz	Yes	Orobanchaceae	E	38	2	A	2,724	2·8	5·6	11·1	531	O	G[c]	CIA
1584a	*Orobanche raddeana* G.Beck	Yes	Orobanchaceae	E	38	2	P	3,486	3·6	7·1	14·3	531	O	G[c]	CIA
1585a	*Orobanche rapum-genistae* Thuill.	Yes	Orobanchaceae	E	38	2	P	2,510	2·6	5·1	10·3	531	O	G[c]	CIA
1586a	*Orobanche teucrii* Holandre	Yes	Orobanchaceae	E	38	2	P	3,397	3·5	6·9	13·9	531	O	G[c]	CIA
1587a	*Orobanche transcaucasica* Tzvel.	Yes	Orobanchaceae	E	38	2	P	3,115	3·2	6·4	12·7	531	O	G[c]	CIA
1588a	*Orobanche transcaucasica* Tzvel.[i]	Yes	Orobanchaceae	E	76	4	P	5,677	5·8	11·6	23·2	531	O	G[c]	CIA
1589a	*Orthophytum saxicola* (Ule) L.B.Sm.	Yes	Bromeliaceae	M	50	2	P	313	0·3	0·6	1·3	571	O	*Glycine*[e]	FC:PI
1590a	*Orychophragmus violaceus* (L.) O.E. Schulz	No	Brassicaceae[j]	E	24	2	P	1,440	1·5	2·9	5·9	602	O	*Solan.*[e]	FC:PI
1591a	*Oryza alta* Swallen	Yes	Poaceae[j]	M	48[o]	4	P	1,022	1·0	2·1	4·2	545	O	K[c]	FC:PI
1592d	*Oryza australiensis* Domin	Yes	Poaceae[j]	M	24[o]	2	P	978	1·0	2·0	4·0	545	O	K[c]	FC:PI
1593b	*Oryza brachyantha* A.Chev. & Roehrich	Yes	Poaceae[j]	M	24[o]	2	A	367	0·4	0·8	1·5	545	O	K[c]	FC:PI
1594b	*Oryza granulata* Nees	Yes	Poaceae[j]	M	24[o]	2	P	895	0·9	1·8	3·7	545	O	K[c]	FC:PI
1595a	*Oryza nivara* S.D.Sharma & Shastry	Yes	Poaceae[j]	M	24[o]	2	A	455	0·5	0·9	1·9	545	O	K[c]	FC:PI
1596a	*Oryza officinalis* Wall.	Yes	Poaceae[j]	M	24[o]	2	P	660	0·7	1·4	2·7	545	O	K[c]	FC:PI
1597b	*Oryza punctata* Kotschy ex Steud.	Yes	Poaceae[j]	M	24[o]	2	A	430	0·4	0·9	1·8	545	O	K[c]	FC:PI
1598a	*Oryza ridleyi* Hook.f.	Yes	Poaceae[j]	M	48[o]	4	P	1,301	1·3	2·7	5·3	545	O	K[c]	FC:PI

1599a	*Oryza rufipogon* Griff.	Yes	Poaceae[j]	M	24[o]	2	P	445	0·5	0·9	1·8	545	O	K[c]	FC:PI
1600v	*Oryza sativa* L. subsp. *japonica*	No	Poaceae[j]	M	–[n]	–[p]	P	577	0·6	1·2	2·4	492	O	*Raphanus*[e]	FC:PI
1601a	*Oxalis pes-caprae* L. (long-styled morph)	Yes	Oxalidaceae	E	28[o]	4	P	670	0·7	1·4	2·7	590	O	G[c]	FC:PI
1602a	*Oxalis pes-caprae* L. (short-styled morph)	Yes	Oxalidaceae	E	35[o]	5	P	–[t]	–[t]	1·7	3·3	590	O	G[c]	FC:PI
1603a	*Pachycladon exilis* (Heenan) Heenan & A.D.Mitch	Yes	Brassicaceae[j]	E	20	–[p]	–[q]	430	0·4	0·9	1·8	599	O	L	FC:PI
1604a	*Pachycladon fastigiata* (Hook.f.) Heenan & A.D.Mitch	Yes	Brassicaceae[j]	E	20	–[p]	–[q]	499	0·5	1·0	2·0	599	O	L	FC:PI
1605a	*Pachycladon novae-zelandiae* (Hook.f.) Hook.f.	Yes	Brassicaceae[j]	E	20	–[p]	–[q]	538	0·6	1·1	2·2	599	O	L	FC:PI
1606a	*Pandanus fascicularis* Lam. spinous morphotype[aw]	No	Pandanaceae	M	60	–[p]	P	1,467	1·5	3·0	6·0	558[aw]	O	B[c]	Fe
1606b	*Pandanus fascicularis* Lam. spineless morphotype[aw]	No	Pandanaceae	M	60	–[p]	P	1,812	1·9	3·7	7·4	558[aw]	O	B[c]	Fe
1606c	*Pandanus fascicularis* Lam. ketaki morphotype[aw]	No	Pandanaceae	M	60	–[p]	P	2,504	2·6	5·1	10·2	558[aw]	O	B[c]	Fe
1607e	*Papaver rhoeas*[l]	No	Papaveraceae	E	–[n]	–[p]	A	5,379	5·5	11·0	22·0	563	O	H[c]	FC:PI
1608a	*Paracautleya bhatii* R.M. Sm. (= *Curcuma batii* (R.M. Sm.) Škorničk. & M. Sabu)	Yes	Zingiberaceae	M	42	6	P	1,066	1·1	2·2	4·4	562	O	*Glycine*[e]	FC:PI
1609a	*Parietaria officinalis* L.	No	Urticaceae	E	–[n]	–[p]	P	553	0·6	1·1	2·3	492	O	*Raphanus*[e]	FC:PI
1610a	*Paris japonica* (Franch. & Sav.) Franch.	Yes	Melanthiaceae	M	40	8	P	148,852	152·2	304·4	608·8	617	O	B	FC:PI
1611a	*Parolinia intermedia* Swent. & Bramwell	–[m]	Brassicaceae[j]	E	22[o]	2	P	993	1·0	2·0	4·1	552	O	*Glycine*[e]	FC:PI
1612a	*Paronychia canariensis* (L.f.) Juss.	–[m]	Caryophyllaceae	E	32[o]	4	P	1,311	1·3	2·7	5·4	477	O	*Solan.*[e]	FC:PI
1613a	*Parrya nudicaulis* (L.) Regel	Yes	Brassicaceae[j]	E	14	2	–[q]	1,056	1·1	2·2	4·3	599	O	L	FC:PI
1614a	*Parthenocissus quinquefolia* (L.) Planchon	Yes	Vitaceae	E	–[n]	–[p]	P	3,110	3·2	6·4	12·7	489	O	–[w]	FC:EB
1615a	*Paspalum orbiculare* G.Forst	Yes	Poaceae[j]	M	63	6	P	1,531	1·6	3·1	6·3	528	O	–[w]	FC:PI
1615b	*Paspalum orbiculare* G.Frost	Yes	Poaceae[j]	M	63	6	P	914	0·9	1·9	3·7	476	O	*Actinidia*[e]	FC:PI
1615c	*Paspalum orbiculare* G.Frost[i]	Yes	Poaceae[j]	M	63	6	P	1,037	1·1	2·1	4·2	476	O	*Actinidia*[e]	FC:PI
1616a	*Passiflora amethystina* Mikan	Yes	Passifloraceae	E	18[o]	2	P	1,643	1·7	3·4	6·7	603	O	H[c]	FC:PI
1617a	*Passiflora caerulea* L.	Yes	Passifloraceae	E	18[o]	2	P	1,540	1·6	3·2	6·3	603	O	H[c]	FC:PI
1618a	*Passiflora cincinnata* Mast.	Yes	Passifloraceae	E	18[o]	2	P	1,389	1·4	2·8	5·7	603	O	H[c]	FC:PI
1619a	*Passiflora coccinea* Aubl.	Yes	Passifloraceae	E	18[o]	2	P	1,584	1·6	3·2	6·5	603	O	H[c]	FC:PI
1620a	*Passiflora edmundoi* Sacco	Yes	Passifloraceae	E	18[o]	2	P	1,677	1·7	3·4	6·9	467	O	H[c]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
1621a	*Passiflora edulis* Sims. f. *edulis*	Yes	Passifloraceae	E	18[o]	2	P	1,545	1·6	3·2	6·3	467	O	H[c]	FC:PI
1621b	*Passiflora edulis* Sims. f. *flavicarpa*[i]	Yes	Passifloraceae	E	18[o]	2	P	1,570	1·6	3·2	6·4	467	O	H[c]	FC:PI
1622a	*Passiflora foetida* L.	Yes	Passifloraceae	E	20[o]	2	P	1,359	1·4	2·8	5·6	603	O	H[c]	FC:PI
1623a	*Passiflora galbana* Mast.	Yes	Passifloraceae	E	18[o]	2	P	1,721	1·8	3·5	7·0	603	O	H[c]	FC:PI
1624a	*Passiflora giberti* N.E.Brown	Yes	Passifloraceae	E	18[o]	2	P	1,917	2·0	3·9	7·8	467	O	H[c]	FC:PI
1625a	*Passiflora laurifolia* L.	Yes	Passifloraceae	E	18[o]	2	P	1,897	1·9	3·9	7·8	467	O	H[c]	FC:PI
1626a	*Passiflora maliformis* L.	Yes	Passifloraceae	E	18[o]	2	P	1,848	1·9	3·8	7·6	603	O	H[c]	FC:PI
1627a	*Passiflora marifloia* Mast.	Yes	Passifloraceae	E	12[o]	2	P	1,359	1·4	2·8	5·6	603	O	H[c]	FC:PI
1628a	*Passiflora miersii* Mast.	Yes	Passifloraceae	E	18[o]	2	P	1,369	1·4	2·8	5·6	603	O	H[c]	FC:PI
1629a	*Passiflora mucronata* Lam.	Yes	Passifloraceae	E	18[o]	2	P	1,663	1·7	3·4	6·8	467	O	H[c]	FC:PI
1630a	*Passiflora nitida* Kunth	Yes	Passifloraceae	E	18[o]	2	P	2,357	2·4	4·8	9·6	603	O	H-1629a	FC:PI
1631a	*Passiflora pentagona* Mast.	Yes	Passifloraceae	E	24[o]	4	P	1,795	1·8	3·7	7·3	603	O	H[c]	FC:PI
1632a	*Passiflora quadrangularis* L.	Yes	Passifloraceae	E	18[o]	2	P	2,621	2·7	5·4	10·7	467	O	H-1629a	FC:PI
1633a	*Passiflora serrato-digitata* L.	Yes	Passifloraceae	E	18[o]	2	P	1,814	1·9	3·7	7·4	603	O	*Solan.*[e]	FC:PI
1634a	*Passiflora suberosa* L.	Yes	Passifloraceae	E	24[o]	4	P	895	0·9	1·8	3·7	467	O	H-1629a	FC:PI
1635a	*Peltaria alliacea* Jacq.	Yes	Brassicaceae[j]	E	14[o]	2	–[q]	303	0·3	0·6	1·2	599	O	L	FC:PI
1636a	*Peltaria emarginata* (Boiss.) Hausskn.	Yes	Brassicaceae[j]	E	14	2	B	939	1·0	1·9	3·8	599	O	L	FC:PI
1636b	*Peltaria emarginata* Hausskn.[i]	Yes	Brassicaceae[j]	E	14	2	B	998	1·0	2·0	4·1	540	O	*Raphanus*[e]	FC:PI
1637a	*Pereskia grandifolia* Haw.	Yes	Cactaceae	E	22	2	P	958	1·0	2·0	3·9	557	O	G[c]	FC:PI
1638a	*Pericallis appendiculata* (L.f.) B.Nord.	–[m]	Asteraceae[j]	E	60[o]	6	P	533	0·5	1·1	2·2	477	O	*Solan.*[e]	FC:PI
1639a	*Pericallis cruenta* (L'Hér.) Bolle	–[m]	Asteraceae[j]	E	60[o]	6	P	665	0·7	1·4	2·7	477	O	*Solan.*[e]	FC:PI
1640a	*Pericallis echinata* (L.f.) B.Nord.	–[m]	Asteraceae[j]	E	60[o]	6	P	714	0·7	1·5	2·9	477	O	*Solan.*[e]	FC:PI
1641a	*Pericallis lanata* (L'Hér.) B.Nord.	–[m]	Asteraceae[j]	E	60[o]	6	P	562	0·6	1·2	2·3	477	O	*Solan.*[e]	FC:PI
1642a	*Pericallis multiflora* (L'Hér.) B.Nord.	–[m]	Asteraceae[j]	E	60[o]	6	P	577	0·6	1·2	2·4	552	O	*Solan.*[e]	FC:PI
1643a	*Pericallis papyracea* (DC.) B.Nord.	–[m]	Asteraceae[j]	E	60[o]	6	P	587	0·6	1·2	2·4	477	O	*Solan.*[e]	FC:PI
1643b	*Pericallis papyracea* (DC.) B.Nord. subsp. *hillebrandtii* (Christ) Hohenester & Welss	–[m]	Asteraceae[j]	E	–[n]	(6)	P	606	0·6	1·2	2·5	552	O	*Solan.*[e]	FC:PI
1644a	*Pericallis tussilaginis* (L'Hér.) D.Don in Sweet	–[m]	Asteraceae[j]	E	60[o]	6	P	734	0·8	1·5	3·0	552	O	*Solan.*[e]	FC:PI
1645a	*Pericallis webbii* (Sch. Bip.) Bolle	–[m]	Asteraceae[j]	E	60[o]	6	P	557	0·6	1·1	2·3	477	O	*Solan.*[e]	FC:PI

1646a	*Periploca laevigata* Ait.	–[m]	Apocynaceae	E	22[o]	2	P	489	0·5	1·0	2·0	477	O	*Solan.*[e]	FC:PI
1647a	*Phagnalon umbelliforme* DC.	–[m]	Asteraceae[j]	E	18[o]	2	P	1,071	1·1	2·2	4·4	477	O	*Glycine*[e]	FC:PI
1648l	*Phaseolus vulgaris* L.	Yes	Fabaceae[j]	E	–[n]	–[p]	A	773	0·8	1·6	3·2	492	O	*Glycine*[e]	FC:PI
1649a	*Phelipanche bungeana* (G.Beck) Soják[an]	Yes	Orobanchaceae	E	24	2	P	5,296	5·4	10·8	21·7	531[an]	O	G[c]	CIA
1650a	*Phelipanche* cf. *coelestis* (Reut.) Soják[an]	Yes	Orobanchaceae	E	24	2	P	4,516	4·6	9·2	18·5	531[an]	O	G[c]	CIA
1651a	*Phelipanche* cf. *gratiosa* (Webb) Carlón, G. Gómez, M. Laínz, Moreno Mor., Ó. Sánchez & Schneew.[an]	Yes	Orobanchaceae	E	24	2	P	4,112	4·2	8·4	16·8	531[an]	O	G[c]	CIA
1652a	*Phelipanche coelestis* (Reut.) Soják[i, an]	Yes	Orobanchaceae	E	24	2	P	4,375	4·5	8·9	17·9	531[an]	O	G[c]	CIA
1653a	*Phelipanche hirtiflora* (Rent.) Soják.[i, an]	Yes	Orobanchaceae	E	24	2	P	4,694	4·8	9·6	19·2	531[an]	O	G[c]	CIA
1654a	*Phelipanche lavandulacea* Rchb.[i, an]	Yes	Orobanchaceae	E	24	2	P	4,367	4·5	8·9	17·9	531[an]	O	G[c]	CIA
1655a	*Phelipanche mutelii* (F.Schultz) Pomel[i, an]	Yes	Orobanchaceae	E	24	2	A	4,101	4·2	8·4	16·8	531[an]	O	G[c]	CIA
1655b	*Phelipanche mutelii* (F.Schultz) Pomel[i, an]	Yes	Orobanchaceae	E	24	2	A	4,779	4·9	9·8	19·5	531[an]	O	G[c]	CIA
1656a	*Phelipanche nana* (F.W.Nðe ex Rchb.fil.) Soják[i, an]	Yes	Orobanchaceae	E	24	2	A	3,356	3·4	6·9	13·7	531[an]	O	G[c]	CIA
1657a	*Phelipanche olbiensis* (Coss.) Carlón, G.Gómez, M.Laínz, Moreno Mor., Ó. Sánchez & Schneew.[an]	Yes	Orobanchaceae	E	24	2	P	3,468	3·5	7·1	14·2	531[an]	O	G[c]	CIA
1658a	*Phelipanche portoilicitana* (A. Pujadas & M.B.Crespo) Carlón, G.Gómez, M.Laínz, Moreno Mor., Ó.Sánchez & Schneew.[i, an]	Yes	Orobanchaceae	E	24	2	P	4,343	4·4	8·9	17·8	531[an]	O	G[c]	CIA
1659a	*Phelipanche pulchella* (C.A.Mey.) Soják[an]	Yes	Orobanchaceae	E	24	2	A	4,175	4·3	8·5	17·1	531[an]	O	G[c]	CIA
1660a	*Phelipanche purpurea* (Jacq.) Soják[an]	Yes	Orobanchaceae	E	24	2	P	4,323	4·4	8·8	17·7	531[an]	O	G[c]	CIA
1661a	*Phelipanche ramosa* (L.) Pomel[i, an]	Yes	Orobanchaceae	E	24	2	A	4,607	4·7	9·4	18·8	531[an]	O	G[c]	CIA
1662a	*Phelipanche tunetana* (G.Beck) Soják[i, an]	Yes	Orobanchaceae	E	24	2	P	3,911	4·0	8·0	16·0	531[an]	O	G[c]	CIA
1663a	*Phelypaea coccinea* Poir.[i]	Yes	Orobanchaceae	E	38	2	P	2,372	2·4	4·9	9·7	531	O	G[c]	CIA
1664a	*Phelypaea tournefortii* Desf.	Yes	Orobanchaceae	E	38	2	P	5,144	5·3	10·5	21·0	531	O	G[c]	CIA
1665a	*Phleum commutatum* Gaud.[i]	No	Poaceae[j]	M	14	2	P	1,334	1·4	2·7	5·5	542	O	H[c]	FC:PI
1665b	*Phelypaea coccinea* Poir.[i]	Yes	Orobanchaceae	E	38	2	P	2,860	2·9	5·8	11·7	531	O	G[c]	CIA
1666a	*Phleum commutatum* Gaud.	No	Poaceae[j]	M	28	4	P	3,030	3·1	6·2	12·4	542	O	*Phleum*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
1667a	*Phleum rhaeticum* (Humphries) Rauschert[h]	No	Poaceae[j]	M	14	2	P	1,177	1·2	2·4	4·8	542	O	H[c]	FC:PI
1667b	*Phleum rhaeticum* (Humphries) Rauschert[h]	No	Poaceae[j]	M	14	2	P	1,431	1·5	2·9	5·9	542	O	H[c]	FC:PI
1668a	*Phoenix canariensis* Chabaud	–[m]	Arecaceae[j]	M	36[o]	2	P	880	0·9	1·8	3·6	552	O	*Glycine*[e]	FC:PI
1669a	*Phyllis nobla* L.	–[m]	Rubiaceae	E	22[o]	2	P	362	0·4	0·7	1·5	552	O	*Raphanus*[e]	FC:PI
1670a	*Phyllota phylicoides* (Sieber ex D.C.) Benth.	–[m]	Fabaceae[j]	E	–[n]	–[p]	–[q]	914	0·9	1·9	3·7	526	O	A	FC:PI
1671a	*Physaria arctica* (Wormsk. ex Hornem) S.Watson	Yes	Brassicaceae[j]	E	16	–[p]	–[q]	675	0·7	1·4	2·8	599	O	L	FC:PI
1672a	*Physaria bellii* G.A.Mulligan	Yes	Brassicaceae[j]	E	8	–[p]	–[q]	2,289	2·3	4·7	9·4	599	O	L	FC:PI
1673a	*Physaria didymocarpa* (Hook.) A.Gray	Yes	Brassicaceae[j]	E	56	–[p]	–[q]	2,181	2·2	4·5	8·9	599	O	L	FC:PI
1674a	*Physaria gracilis* (Hook.) O'Kane & Al-Shehbaz	Yes	Brassicaceae[j]	E	12	–[p]	–[q]	254	0·3	0·5	1·0	599	O	L	FC:PI
1675a	*Physaria ovalifolia* (Rydb.) O'Kane & Al-Shehbaz	Yes	Brassicaceae[j]	E	12	–[p]	–[q]	421	0·4	0·9	1·7	599	O	L	FC:PI
1676b	*Physocarpus opulifolius* (L.) Maxim.	No	Rosaceae	E	–[n]	–[p]	P	347	0·4	0·7	1·4	492	O	*Raphanus*[e]	FC:PI
1677a	*Physorhynchus chamaerapistrum* (Boiss.) Boiss.	No	Brassicaceae[j]	E	32	2	A	1,213	1·2	2·5	5·0	602	O	*Solan.*[e]	FC:PI
1678a	*Picrorhiza kurrooa* Royle	Yes	Plantaginaceae	E	34[o]	4	P	1,712	1·8	3·5	7·0	478	O	*Petroselinum*[e]	FC:PI
1679a	*Pilosocereus royenii* (L.) Byles & G.D.Rowley	Yes	Cactaceae	E	–[n]	6	P	3,183	3·3	6·5	13·0	557	O	G[c]	FC:PI
1680a	*Pimelea linifolia*[l]	–[m]	Thymelaeaceae	E	–[n]	–[p]	–[q]	3,648	3·7	7·5	14·9	526	O	A	FC:PI
1681a	*Pimpinella cumbrae* Link	–[m]	Apiaceae[j]	E	20[o]	2	P	2,249	2·3	4·6	9·2	477	O	H[c]	FC:PI
1682a	*Pinguicula agnata* Casper	Yes	Lentibulariaceae	E	22	–[p]	P	744	0·8	1·5	3·0	535	O	G[c]	CIA
1683a	*Pinguicula cyclosecta* Casper	Yes	Lentibulariaceae	E	22	–[p]	P	520	0·5	1·1	2·1	535	O	G[c]	CIA
1684a	*Pinguicula ehlersiae* Speta & F.Fuchs	Yes	Lentibulariaceae	E	–[n]	–[p]	P	487	0·5	1·0	2·0	535	O	G[c]	CIA
1685a	*Pinguicula emarginata* Zamudio & Rzed.	Yes	Lentibulariaceae	E	22	–[p]	P	791	0·8	1·6	3·2	535	O	G[c]	CIA
1686a	*Pinguicula esseriana* B.Kirchner	Yes	Lentibulariaceae	E	32	–[p]	P	829	0·8	1·7	3·4	535	O	G[c]	CIA
1687a	*Pinguicula gracilis* Zamudio	Yes	Lentibulariaceae	E	–[n]	–[p]	P	600	0·6	1·2	2·5	535	O	G[c]	CIA
1688a	*Pinguicula gypsicola* Brandegee	Yes	Lentibulariaceae	E	22	–[p]	P	548	0·6	1·1	2·2	535	O	G[c]	CIA
1689a	*Pinguicula heterophylla* Benth.	Yes	Lentibulariaceae	E	22	–[p]	P	513	0·5	1·1	2·1	535	O	G[c]	CIA

1690a	*Pinguicula macrophylla* Kunth	Yes	Lentibulariaceae	E	22	–[p]	P	693	0·7	1·4	2·8	535	O	G[c]	CIA
1691a	*Pistacia therebinthus* L.	Yes	Anacardiaceae	E	–[n]	–[p]	P	660	0·7	1·4	2·7	489	O	–[w]	FC:EB
1692p	*Pisum sativum* L.	Yes	Fabaceae[j]	E	–[n]	–[p]	A	4,435	4·5	9·1	18·1	492	O	G[c]	FC:PI
1693a	*Pitcairnia andreana* Linden	Yes	Bromeliaceae	M	–[n]	–[p]	P	636	0·7	1·3	2·6	575	O	*Raphanus*[e]	FC:PI
1694a	*Pitcairnia angustifolia* Aiton[i]	Yes	Bromeliaceae	M	–[n]	–[p]	P	518	0·5	1·1	2·1	575	O	*Glycine*[e]	FC:PI
1695a	*Pitcairnia aphelandriflora* Lem.	Yes	Bromeliaceae	M	–[n]	–[p]	P	606	0·6	1·2	2·5	575	O	*Raphanus*[e]	FC:PI
1696a	*Pitcairnia atrorubens* (Beer) Baker	Yes	Bromeliaceae	M	–[n]	–[p]	P	587	0·6	1·2	2·4	575	O	*Raphanus*[e]	FC:PI
1697a	*Pitcairnia aureobrunnea* Rauh	Yes	Bromeliaceae	M	–[n]	–[p]	P	548	0·6	1·1	2·2	575	O	*Glycine*[e]	FC:PI
1698a	*Pitcairnia cardenasii* L.B.Sm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	499	0·5	1·0	2·0	575	O	*Glycine*[e]	FC:PI
1699a	*Pitcairnia chiapensis* Miranda	Yes	Bromeliaceae	M	–[n]	–[p]	P	597	0·6	1·2	2·4	575	O	*Raphanus*[e]	FC:PI
1700a	*Pitcairnia feliciana* (A.Chev.) Harms & Mildbr.	Yes	Bromeliaceae	M	50	2	P	293	0·3	0·6	1·2	575	O	*Raphanus*[e]	FC:PI
1701a	*Pitcairnia flammea* Lindl. var. *glabrior* L.B.Sm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	626	0·6	1·3	2·6	575	O	*Raphanus*[e]	FC:PI
1702a	*Pitcairnia grafii* Rauh	Yes	Bromeliaceae	M	–[n]	–[p]	P	655	0·7	1·3	2·7	575	O	*Raphanus*[e]	FC:PI
1703a	*Pitcairnia halophila* L.B.Sm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	528	0·5	1·1	2·2	575	O	*Glycine*[e]	FC:PI
1704a	*Pitcairnia heerdeae* E.Gross & Rauh	Yes	Bromeliaceae	M	–[n]	–[p]	P	577	0·6	1·2	2·4	575	O	*Raphanus*[e]	FC:PI
1705a	*Pitcairnia heterophylla* (Lindl.) Beer	Yes	Bromeliaceae	M	–[n]	–[p]	P	430	0·4	0·9	1·8	575	O	*Raphanus*[e]	FC:PI
1706a	*Pitcairnia hitchcockiana* L.B.Sm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	626	0·6	1·3	2·6	575	O	*Raphanus*[e]	FC:PI
1707a	*Pitcairnia macrochlamys* Mez	Yes	Bromeliaceae	M	–[n]	–[p]	P	587	0·6	1·2	2·4	575	O	*Raphanus*[e]	FC:PI
1708a	*Pitcairnia micotrinensis* Read	Yes	Bromeliaceae	M	–[n]	–[p]	P	538	0·6	1·1	2·2	575	O	*Glycine*[e]	FC:PI
1709a	*Pitcairnia palmoides* Mez & Sodiro	Yes	Bromeliaceae	M	–[n]	–[p]	P	577	0·6	1·2	2·4	575	O	*Raphanus*[e]	FC:PI
1710a	*Pitcairnia paraguayensis* L.B.Sm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	665	0·7	1·4	2·7	575	O	*Raphanus*[e]	FC:PI
1711a	*Pitcairnia piepenbringii* Rauh & E.Gross	Yes	Bromeliaceae	M	–[n]	–[p]	P	587	0·6	1·2	2·4	575	O	*Raphanus*[e]	FC:PI
1712a	*Pitcairnia poeppigiana* Mez	Yes	Bromeliaceae	M	–[n]	–[p]	P	587	0·6	1·2	2·4	575	O	*Raphanus*[e]	FC:PI
1713a	*Pitcairnia pomacochae* Rauh	Yes	Bromeliaceae	M	–[n]	–[p]	P	606	0·6	1·2	2·5	575	O	*Raphanus*[e]	FC:PI
1714a	*Pitcairnia prolifera* Rauh	Yes	Bromeliaceae	M	–[n]	–[p]	P	411	0·4	0·8	1·7	575	O	*Raphanus*[e]	FC:PI
1715a	*Pitcairnia rectiflora* Rauh	Yes	Bromeliaceae	M	–[n]	–[p]	P	587	0·6	1·2	2·4	575	O	*Raphanus*[e]	FC:PI
1716a	*Pitcairnia riparia* Mez	Yes	Bromeliaceae	M	–[n]	–[p]	P	557	0·6	1·1	2·3	575	O	*Glycine*[e]	FC:PI
1717a	*Pitcairnia sceptrigera* Mez	Yes	Bromeliaceae	M	–[n]	–[p]	P	587	0·6	1·2	2·4	575	O	*Raphanus*[e]	FC:PI
1718a	*Pitcairnia schultzei* Harms	Yes	Bromeliaceae	M	–[n]	–[p]	P	645	0·7	1·3	2·6	575	O	*Raphanus*[e]	FC:PI
1719a	*Pitcairnia spicata* (Lam.) Mez	Yes	Bromeliaceae	M	–[n]	–[p]	P	597	0·6	1·2	2·4	575	O	*Raphanus*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
1720a	*Pitcairnia tabuliformis* Linden	Yes	Bromeliaceae	M	–[n]	–[p]	P	538	0·6	1·1	2·2	575	O	*Glycine*[e]	FC:PI
1721a	*Pitcairnia venezuelana* L.B.Sm. & Steyerm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	665	0·7	1·4	2·7	575	O	*Raphanus*[e]	FC:PI
1722a	*Pitcairnia villetaensis* Rauh	Yes	Bromeliaceae	M	–[n]	–[p]	P	616	0·6	1·3	2·5	575	O	*Raphanus*[e]	FC:PI
1723a	*Pitcairnia yaupibajaensis* Rauh	Yes	Bromeliaceae	M	–[n]	–[p]	P	548	0·6	1·1	2·2	575	O	*Glycine*[e]	FC:PI
1724a	*Pittosporum tobira* Aiton	Yes	Pittosporaceae	E	–[n]	–[p]	P	592	0·6	1·2	2·4	489	O	–[w]	FC:EB
1725a	*Plantago arborescens* Poir. subsp. *arborescens* var. *arborescens*	–[m]	Plantaginaceae	E	12[o]	2	P	474	0·5	1·0	1·9	477	O	*Solan.*[e]	FC:PI
1726a	*Plantago famarae* Svent.	–[m]	Plantaginaceae	E	12[o]	2	P	489	0·5	1·0	2·0	477	O	*Solan.*[e]	FC:PI
1727a	*Plantago webbii* Barn.	–[m]	Plantaginaceae	E	12	2	P	543	0·6	1·1	2·2	477	O	*Solan.*[e]	FC:PI
1728a	*Platanus hispanica* Miller ex Münchh.	Yes	Platanaceae	E	–[n]	–[p]	P	1,878	1·9	3·8	7·7	489	O	–[w]	FC:EB
1729b	*Plocama pendula* Ait.	–[m]	Rubiaceae	E	44[o]	4	P	1,364	1·4	2·8	5·6	477	O	*Glycine*[e]	FC:PI
1730a	*Poa acicularifolia* Buchanan subsp. *acicularifolia*	Yes	Poaceae[j]	M	28	4	P	2,616	2·7	5·4	10·7	528	O	–[w]	FC:PI
1730b	*Poa acicularifolia* Edgar subsp. *ophitalis*	Yes	Poaceae[j]	M	28	4	P	3,007	3·1	6·2	12·3	528	O	–[w]	FC:PI
1731a	*Poa* aff. *cita*[l]	Yes	Poaceae[j]	M	112	16	P	8,528	8·7	17·4	34·9	528	O	–[w]	FC:PI
1732a	*Poa* aff. *colensoi*[l]	Yes	Poaceae[j]	M	28	4	P	2,958	3·0	6·1	12·1	528	O	–[w]	FC:PI
1733a	*Poa anceps* G.Forst subsp. *polyphylla* (Hack.) Edgar	Yes	Poaceae[j]	M	28	4	P	2,665	2·7	5·5	10·9	528	O	–[w]	FC:PI
1733b	*Poa anceps* G.Forst subsp. *anceps*[i]	Yes	Poaceae[j]	M	28	4	P	2,939	3·0	6·0	12·0	528	O	–[w]	FC:PI
1734a	*Poa astonii* Petrie	Yes	Poaceae[j]	M	28	4	P	2,924	3·0	6·0	12·0	528	O	–[w]	FC:PI
1735a	*Poa breviglumis* Hook.f.[i]	Yes	Poaceae[j]	M	28	4	P	2,225	2·3	4·6	9·1	528	O	–[w]	FC:PI
1736a	*Poa buchananii* Zotov	Yes	Poaceae[j]	M	28	4	P	2,768	2·8	5·7	11·3	528	O	–[w]	FC:PI
1737a	*Poa chathamica* Petrie[i]	Yes	Poaceae[j]	M	112	16	P	10,416	10·7	21·3	42·6	528	O	–[w]	FC:PI
1738a	*Poa cita* Edgar[i]	Yes	Poaceae[j]	M	84	12	P	7,330	7·5	15·0	30·0	528	O	–[w]	FC:PI
1739a	*Poa colensoi* Hook.f.[i]	Yes	Poaceae[j]	M	28	4	P	2,763	2·8	5·7	11·3	528	O	–[w]	FC:PI
1739b	*Poa colensoi* Hook.f.[i]	Yes	Poaceae[j]	M	28	4	P	1,271	1·3	2·6	5·2	476	O	*Actinidia*[e]	FC:PI
1739c	*Poa colensoi* Hook.f.[i]	Yes	Poaceae[j]	M	28	4	P	1,663	1·7	3·4	6·8	476	O	*Actinidia*[e]	FC:PI
1740a	*Poa dipsacea* Petrie	Yes	Poaceae[j]	M	28[o]	4	P	2,734	2·8	5·6	11·2	528	O	–[w]	FC:PI
1741a	*Poa foliosa* (Hook.f.) Hook.f.	Yes	Poaceae[j]	M	28	4	P	2,929	3·0	6·0	12·0	528	O	–[w]	FC:PI
1742a	*Poa imbecilla* Spreng.	Yes	Poaceae[j]	M	28	4	P	2,083	2·1	4·3	8·5	528	O	–[w]	FC:PI
1743a	*Poa incrassata* Petrie	Yes	Poaceae[j]	M	28	4	P	2,738	2·8	5·6	11·2	528	O	–[w]	FC:PI
1744a	*Poa intrusa* Edgar	Yes	Poaceae[j]	M	28	4	P	2,939	3·0	6·0	12·0	528	O	–[w]	FC:PI
1745a	*Poa kirkii* Buchanan	Yes	Poaceae[j]	M	28	4	P	2,391	2·4	4·9	9·8	528	O	–[w]	FC:PI
1746a	*Poa lindsayi* Hook.f.[i]	Yes	Poaceae[j]	M	28	4	P	2,205	2·3	4·5	9·0	528	O	–[w]	FC:PI
1746b	*Poa lindsayi* Hook.f.[i]	Yes	Poaceae[j]	M	28	4	P	2,230	2·3	4·6	9·1	528	O	–[w]	FC:PI
1747a	*Poa litorosa* Cheeseman[i]	Yes	Poaceae[j]	M	263-266[o]	38	P	15,922	16·3	32·6	65·1	528	O	–[w]	FC:PI
1748a	*Poa maniototo* Petrie	Yes	Poaceae[j]	M	28	4	P	2,685	2·7	5·5	11·0	528	O	–[w]	FC:PI
1749a	*Poa matthewsii* Petrie	Yes	Poaceae[j]	M	28	4	P	2,685	2·7	5·5	11·0	528	O	–[w]	FC:PI

1750a	*Poa novae-zelandiae* Hack.[i]	Yes	Poaceae[j]	M	28	4	P	3,090	3·2	6·3	12·6	528	O	–[w]	FC:PI
1751a	*Poa pusilla* Berggr.	Yes	Poaceae[j]	M	28	4	P	2,690	2·8	5·5	11·0	528	O	–[w]	FC:PI
1752a	*Poa ramosissima* Hook.f.	Yes	Poaceae[j]	M	28	4	P	2,782	2·8	5·7	11·4	528	O	–[w]	FC:PI
1753a	*Poa schistacea* Edgar & Connor	Yes	Poaceae[j]	M	28	4	P	5,389	5·5	11·0	22·0	528	O	–[w]	FC:PI
1754a	*Poa spania* Edgar & Molloy	Yes	Poaceae[j]	M	28	4	P	2,352	2·4	4·8	9·6	528	O	–[w]	FC:PI
1754b	*Poa spania* Edgar & Molloy	Yes	Poaceae[j]	M	28	4	P	1,663	1·7	3·4	6·8	476	O	*Actinidia*[e]	FC:PI
1755a	*Poa sublimis* Edgar	Yes	Poaceae[j]	M	28	4	P	2,455	2·5	5·0	10·0	528	O	–[w]	FC:PI
1756a	*Poa sudicola* Edgar	Yes	Poaceae[j]	M	28	4	P	3,174	3·2	6·5	13·0	528	O	–[w]	FC:PI
1757b	*Poa trivialis* L.	–[m]	Poaceae[j]	M	14[o]	2	P	1,625	1·7	3·3	6·6	555	O	G[c]	FC:PI
1758a	*Poa xenica* Edgar & Connor	Yes	Poaceae[j]	M	28	4	P	3,262	3·3	6·7	13·3	528	O	–[w]	FC:PI
1759a	*Poellnitzia rubriflora* Uitew.	Yes	Xanthorrhoeaceae[k]	M	14[o]	2	P	17,115	17·5	35·0	70·0	473	O	*Agave* sp.[e]	FC:PI
1760a	*Polycarpaea aristata* (Ait.) DC.	–[m]	Caryophyllaceae	E	–[n]	2[z]	P	455	0·5	0·9	1·9	477	O	*Raphanus*[e]	FC:PI
1761a	*Polycarpaea carnosa* C.Sm. ex Buch	–[m]	Caryophyllaceae	E	18[o]	2	P	411	0·4	0·8	1·7	552	O	*Raphanus*[e]	FC:PI
1762a	*Polycarpaea latifolia* Willd.	–[m]	Caryophyllaceae	E	18[o]	2	P	435	0·4	0·9	1·8	477	O	*Raphanus*[e]	FC:PI
1763a	*Polycarpaea smithii* Link	–[m]	Caryophyllaceae	E	–[n]	–[p]	P	533	0·5	1·1	2·2	477	O	*Solan.*[e]	FC:PI
1764a	*Polycarpaea tenuis* Webb ex Christ	–[m]	Caryophyllaceae	E	18	2	P	445	0·5	0·9	1·8	477	O	*Raphanus*[e]	FC:PI
1765a	*Polygala angustifolia* Lange	Yes	Polygalaceae	E	–[n]	–[p]	P	416	0·4	0·9	1·7	489	O	–[w]	FC:EB
1766a	*Polygala calcarea* F.W.Schultz cv. Lillet	Yes	Polygalaceae	E	c. 30	–[p]	P	421	0·4	0·9	1·7	612	O	J	FC:PI
1766b	*Polygala calcarea* F.W.Schultz	Yes	Polygalaceae	E	34[o]	2	P	479	0·5	1·0	2·0	550	O	H[c]	FC:PI
1767a	*Polygala microphylla* L.	Yes	Polygalaceae	E	–[n]	–[p]	P	513	0·5	1·1	2·1	489	O	–[w]	FC:EB
1768a	*Polygala vayredae* Costa	Yes	Polygalaceae	E	28	4	P	1,325	1·4	2·7	5·4	550	O	*Solan.*[e]	FC:PI
1769a	*Polygala vulgaris* L.	Yes	Polygalaceae	E	–[n]	–[p]	P	435	0·4	0·9	1·8	489	O	–[w]	FC:EB
1770a	*Populus alba* L.	Yes	Salicaceae	E	–[n]	–[p]	P	509	0·5	1·0	2·1	489	O	–[w]	FC:EB
1771a	*Populus nigra* L.	Yes	Salicaceae	E	–[n]	–[p]	P	528	0·5	1·1	2·2	489	O	–[w]	FC:EB
1772a	*Populus trichocarpa* Torr. & Gray 'Nisqually-1'	No	Salicaceae	E	38	–[p]	P	484	0·5	1·0	2·0	613	O	–[ax]	GS
1773a	*Posidonia oceanica* (L.) Del.	Yes	Posidoniaceae	M	20[o]	2	P	3,056	3·1	6·3	12·5	479	O	G[c]	CIA
1773b	*Posidonia oceanica* (L.) Del.	Yes	Posidoniaceae	M	20[o]	2	P	3,555	3·6	7·3	14·5	479	O	*Trifolium*[e]	FC:PI
1774a	*Potentilla indica* (Andr.) Focke	Yes	Rosaceae	E	–[n]	–[p]	P	1,751	1·8	3·6	7·2	527	O	G[c]	FC:PI
1775a	*Premna latifolia* Roxb.	No	Lamiaceae[k]	E	28[o]	2	P	1,516	1·6	3·1	6·2	501[ag]	O	B[c]	Fe
1776a	*Pritzelago alpina* (L.) Kuntze	Yes	Brassicaceae[j]	E	12	–[p]	–[q]	186	0·2	0·4	0·8	599	O	L	FC:PI
1777a	*Prosartes smithii* (Hook.) Utech, Shinwari & Kawano	Yes	Liliaceae	M	16	2	P	3,325	3·4	6·8	13·6	565	O	G	FC:PI
1778a	*Prunus angustifolia*[l]	No	Rosaceae	E	16[o]	2	P	298	0·3	0·6	1·2	606	O	*Gallus*[f]	FC:PI
1779a	*Prunus besseyi* L.H.Bailey	No	Rosaceae	E	16[o]	2	P	328	0·3	0·7	1·3	606	O	*Gallus*[f]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
1780a	*Prunus cistena* N.E.Hensen	No	Rosaceae	E	16[o]	2	P	313	0·3	0·6	1·3	606	O	*Gallus*[f]	FC:PI
1781a	*Prunus davidiana*[l]	No	Rosaceae	E	16[o]	2	P	303	0·3	0·6	1·2	606	O	*Gallus*[f]	FC:PI
1782a	*Prunus domestica*[l]	No	Rosaceae	E	–[n]	–[p]	P	323	0·3	0·7	1·3	563	O	*Solan.*[e]	FC:PI
1783a	*Prunus dulcis* (Mill.) D.A.Webb	No	Rosaceae	E	16[o]	2	P	323	0·3	0·7	1·3	606	O	*Gallus*[f]	FC:PI
1784a	*Prunus fenzliana* Fritsch	No	Rosaceae	E	16[o]	2	P	367	0·4	0·8	1·5	606	O	*Gallus*[f]	FC:PI
1785a	*Prunus hortulana* L.H.Bailey	No	Rosaceae	E	16[o]	2	P	293	0·3	0·6	1·2	606	O	*Gallus*[f]	FC:PI
1786a	*Prunus kansuensis* Rehder	No	Rosaceae	E	16[o]	2	P	293	0·3	0·6	1·2	606	O	*Gallus*[f]	FC:PI
1787a	*Prunus mira*[l]	No	Rosaceae	E	16[o]	2	P	323	0·3	0·7	1·3	606	O	*Gallus*[f]	FC:PI
1788a	*Prunus padus* L.	Yes	Rosaceae	E	–[n]	–[p]	P	1,149	1·2	2·4	4·7	489	O	–[w]	FC:EB
1789c	*Prunus persica*[l]	No	Rosaceae	E	–[n]	–[p]	P	303	0·3	0·6	1·2	563	O	*Solan.*[e]	FC:PI
1789d	*Prunus persica* (L.) Batsch cv. Jefferson	No	Rosaceae	E	16[o]	2	P	323	0·3	0·7	1·3	607	O	–[w]	Fe
1789e	*Prunus persica* (L.) Batsch cv. Jefferson	No	Rosaceae	E	16[o]	2	P	303	0·3	0·6	1·2	606	O	*Gallus*[f]	FC:PI
1790a	*Prunus tomentosa* Thunb.	No	Rosaceae	E	16[o]	2	P	279	0·3	0·6	1·1	606	O	*Gallus*[f]	FC:PI
1791a	*Prunus webbii*[l]	No	Rosaceae	E	16[o]	2	P	377	0·4	0·8	1·5	606	O	*Gallus*[f]	FC:PI
1792a	*Psephellus marschallianus* (Sprengel) K.Koch	Yes	Asteraceae[j]	E	30	2	P	1,751	1·8	3·6	7·2	529	O	G[c]	CIA
1793a	*Pseudobombax ellipticum* (Kunth) Dugand	No	Malvaceae[k]	E	–[n]	–[p]	P	1,712	1·8	3·5	7·0	501[ag]	O	B[c]	Fe
1794a	*Pseudoturritis turrita* (L.) Al-Shehbaz	Yes	Brassicaceae[j]	E	16	2	–[q]	372	0·4	0·8	1·5	599	O	L	FC:PI
1795a	*Psychine stylosa* Desf.	Yes	Brassicaceae[j]	E	30	–[p]	–[q]	499	0·5	1·0	2·0	599	O	L	FC:PI
1796a	*Psychotria ipecacuanha* (Brot.) Stokes[h, as]	No	Rubiaceae	E	22	–[p]	P	1,002	1·0	2·1	4·1	578[as]	O	*Solan.*-1796b[e]	FC:PI
1796b	*Psychotria ipecacuanha* (Brot.) Stokes Mozar population[h, as]	No	Rubiaceae	E	–[n]	–[p]	P	606	0·6	1·2	2·5	578[as]	O	*Solan.*[e]	FC:PI
1797a	*Pterocephalus dumetorum* (Brouss. ex Willd.) Coult.	–[m]	Caprifoliaceae[k]	E	18	2	P	1,741	1·8	3·6	7·1	477	O	*Glycine*[e]	FC:PI
1798a	*Pterocephalus lasiospermus* (Brouss. ex Willd.) Coult.	–[m]	Caprifoliaceae	E	18[o]	2	P	1,614	1·7	3·3	6·6	552	O	*Glycine*[e]	FC:PI
1799a	*Pterocephalus virens* Webb & Berthel.	–[m]	Caprifoliaceae	E	18[o]	2	P	1,712	1·8	3·5	7·0	552	O	*Glycine*[e]	FC:PI
1800a	*Pterospartum tridentatum*[l]	No	Fabaceae[j]	E	–[n]	–[p]	–[q]	2,269	2·3	4·6	9·3	563	O	H[c]	FC:PI
1801a	*Ptilotrichum canescens* (DC.) C.A.Mey.	Yes	Brassicaceae[j]	E	–[n]	–[p]	–[q]	2,210	2·3	4·5	9·0	599	O	L	FC:PI
1802a	*Ptilotrichum spinosum* Boiss.	Yes	Brassicaceae[j]	E	32	–[p]	–[q]	616	0·6	1·3	2·5	599	O	L	FC:PI
1803a	*Ptilotus atriplicifolius*[l]	–[m]	Amaranthaceae	E	–[n]	–[p]	–[q]	3,271	3·3	6·7	13·4	526	O	A	FC:PI
1804a	*Puccinellia palustris* (Seen.) Podp.	Yes	Poaceae[j]	M	42[o]	6	P	3,985	4·1	8·2	16·3	580	O	G[c]	CIA

1805a	*Puccinellia stricta* (Hook.f.) Blom	Yes	Poaceae[j]	M	14	2	P	1,736	1·8	3·6	7·1	528	O	–[w]	FC:PI
1806a	*Puccinellia walkeri* (Cheeseman) Edgar subsp. *chathamica*	Yes	Poaceae[j]	M	42	6	P	4,699	4·8	9·6	19·2	528	O	–[w]	FC:PI
1807a	*Pultenaea daphnoides* J.C.Wendl.	–[m]	Fabaceae[j]	E	–[n]	–[p]	–[q]	699	0·7	1·4	2·9	526	O	A	FC:PI
1808a	*Pultenaea flexilis* Sm.	–[m]	Fabaceae[j]	E	–[n]	–[p]	–[q]	2,518	2·6	5·2	10·3	526	O	A	FC:PI
1809a	*Puya mirabilis* (Mez) L.B.Sm.	Yes	Bromeliaceae	M	–[n]	–[p]	P	430	0·4	0·9	1·8	575	O	*Raphanus*[e]	FC:PI
1810a	*Puya stenothyrsa* (Baker) Mez	Yes	Bromeliaceae	M	–[n]	–[p]	P	460	0·5	0·9	1·9	575	O	*Raphanus*[e]	FC:PI
1811b	*Pyracantha coccinea* M.Roem.	Yes	Rosaceae	E	–[n]	2[z]	P	729	0·7	1·5	3·0	527	O	G[c]	FC:PI
1812a	*Pyrrhanthera exigua* (Kirk) Zotov	Yes	Poaceae[j]	M	c. 156[o]	26	P	10,518	10·8	21·5	43·0	528	O	–[w]	FC:PI
1812b	*Pyrrhanthera exigua* (Kirk) Zotov	Yes	Poaceae[j]	M	c. 156	26	P	6,699	6·9	13·7	27·4	476	O	*Actinidia*[e]	FC:PI
1813b	*Pyrus communis*[l]	No	Rosaceae	E	–[n]	–[p]	P	606	0·6	1·2	2·5	563	O	*Solan.*[e]	FC:PI
1814b	*Quercus ilex* L. subsp. *ballota* (Desf.) Samp.	Yes	Fagaceae	E	–[n]	–[p]	P	954	1·0	2·0	3·9	489	O	–[w]	FC:EB
1815e	*Quercus petraea* (Mattuschka) Liebl.	Yes	Fagaceae	E	–[n]	–[p]	P	817	0·8	1·7	3·3	489	O	–[w]	FC:EB
1816a	*Quercus pyrenaica* Willd.	Yes	Fagaceae	E	–[n]	–[p]	P	817	0·8	1·7	3·3	489	O	–[w]	FC:EB
1817c	*Quercus robur* L.[i]	Yes	Fagaceae	E	–[n]	–[p]	P	856	0·9	1·8	3·5	489	O	–[w]	FC:EB
1817d	*Quercus robur* L.[i]	Yes	Fagaceae	E	–[n]	–[p]	P	758	0·8	1·6	3·1	489	O	–[w]	FC:EB
1817e	*Quercus robur* L.	No	Fagaceae	E	–[n]	–[p]	P	1,066	1·1	2·2	4·4	492	O	*Glycine*[e]	FC:PI
1817f	*Quercus robur* L.	No	Fagaceae	E	–[n]	–[p]	P	968	1·0	2·0	4·0	563	O	*Glycine*[e]	FC:PI
1818a	*Quercus rubra* L.	Yes	Fagaceae	E	–[n]	–[p]	P	831	0·9	1·7	3·4	489	O	–[w]	FC:EB
1819b	*Quercus suber* L.	Yes	Fagaceae	E	–[n]	–[p]	P	822	0·8	1·7	3·4	489	O	–[w]	FC:EB
1819c	*Quercus suber* L.	No[m1]	Fagaceae	E	–[n]	–[p]	P	983	1·0	2·0	4·0	584	O	*Glycine*[e]	FC:PI
1820a	*Ranunculus adoneus* Gray	Yes	Ranunculaceae	E	16[o]	2	P	2,870	2·9	5·9	11·7	523	O	F	FC:DAPI
1821a	*Ranunculus adoneus* Gray	Yes	Ranunculaceae	E	32[o]	4	P	5,844	6·0	12·0	23·9	523	O	F	FC:DAPI
1822a	*Ranunculus carpaticola* Soó	Yes	Ranunculaceae	E	16	2	P	2,993	3·1	6·1	12·2	474	O	G[c]	Fe
1823a	*Ranunculus carpaticola* Soó	Yes	Ranunculaceae	E	48	6	P	7,873	8·1	16·1	32·2	474	O	G[c]	Fe
1824a	*Ranunculus cassubicifolius* W.Koch[i]	Yes	Ranunculaceae	E	16	2	P	3,081	3·2	6·3	12·6	474	O	G[c]	Fe
1825a	*Ranunculus cassubicifolius* W.Koch[i]	Yes	Ranunculaceae	E	32	4	P	5,721	5·9	11·7	23·4	474	O	G[c]	Fe
1826a	*Ranunculus escholtzii* Schlechtendal var. *trisectus*	Yes	Ranunculaceae	E	16	2	P	3,076	3·1	6·3	12·6	523	O	F	FC:DAPI
1826b	*Ranunculus escholtzii* Schlechtendal var. *suksdorfii*	Yes	Ranunculaceae	E	16[o]	2	P	3,355	3·4	6·9	13·7	523	O	F	FC:DAPI
1827a	*Ranunculus escholtzii* Schlechtendal var. *escholtzii*[i]	Yes	Ranunculaceae	E	32	4	P	7,169	7·3	14·7	29·3	523	O	F	FC:DAPI
1828a	*Ranunculus escholtzii* Schlechtendal var. *escholtzii*	Yes	Ranunculaceae	E	48	6	P	9,457	9·7	19·3	38·7	523	O	F	FC:DAPI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
1828b	*Ranunculus escholtzii* Schlechtendal var. *oxynotus*	Yes	Ranunculaceae	E	48[o]	6	P	9,731	10·0	19·9	39·8	523	O	F	FC:DAPI
1829a	*Ranunculus macauleyi* Gray	Yes	Ranunculaceae	E	16[o]	2	P	2,900	3·0	5·9	11·9	523	O	F	FC:DAPI
1830g	*Raphanus sativus* L.	No	Brassicaceae[j]	E	–[n]	–[p]	AB	675	0·7	1·4	2·8	492	O	G[c]	FC:PI
1830h	*Raphanus sativus* L.	–[m]	Brassicaceae[j]	E	18[o]	–[p]	–[q]	570	0·6	1·2	2·3	509	O	–[w]	FC:PI
1830i	*Raphanus sativus* L.	Yes	Brassicaceae[j]	E	18	–[p]	–[q]	518	0·5	1·1	2·1	599	O	L	FC:PI
1831a	*Reichardia ligulata* (Vent.) Kunk. & Sund.	–[m]	Asteraceae[j]	E	16	2	P	1,848	1·9	3·8	7·6	477	O	*Glycine*[e]	FC:PI
1832a	*Reseda scoparia* Brouss. ex Willd.	–[m]	Resedaceae	E	30[o]	≥2	P	342	0·4	0·7	1·4	552	O	*Raphanus*[e]	FC:PI
1833a	*Rhamnus alpinus* L. subsp. *alpinus*	Yes	Rhamnaceae	E	–[n]	–[p]	P	680	0·7	1·4	2·8	489	O	–[w]	FC:EB
1834a	*Ribes alpinum* L.	Yes	Grossulariaceae	E	16	2	P	988	1·0	2·0	4·0	507	O	*Petunia*[e]	FC:EB
1835a	*Ribes petraeum* Wulf.	Yes	Grossulariaceae	E	16	2	P	939	1·0	1·9	3·8	507	O	*Petunia*[e]	FC:EB
1836a	*Ribes rubrum* L.	Yes	Grossulariaceae	E	16	2	P	949	1·0	1·9	3·9	507	O	*Petunia*[e]	FC:EB
1837a	*Ribes uva-crispa* L.	Yes	Grossulariaceae	E	16	2	P	919	0·9	1·9	3·8	507	O	*Petunia*[e]	FC:EB
1838c	*Ricinus communis* L.	No	Euphorbiaceae	E	20[o]	2	P	528	0·5	1·1	2·2	501[ag]	O	B[c]	Fe
1838d	*Ricinus communis* L.	No	Euphorbiaceae	E	–[n]	–[p]	AP	509	0·5	1·0	2·1	518	O	*Raphanus*[e]	FC:PI
1839b	*Robinia pseudoacacia* L.	Yes	Fabaceae[j]	E	–[n]	–[p]	P	719	0·7	1·5	2·9	489	O	–[w]	FC:EB
1840a	*Rorippa palustris* (L.) Besser	Yes	Brassicaceae[j]	E	32	–[p]	–[q]	528	0·5	1·1	2·2	599	O	L	FC:PI
1841a	*Rubia fruticosa* Aiton subsp. *melanocarpa* (Bornm.) Bramwell	–[m]	Rubiaceae	E	44, 45	4	P	2,699	2·8	5·5	11·0	552	O	G[c]	FC:PI
1842a	*Rubus alceifolius* Poir.	Yes	Rosaceae	E	21	3[z]	P	–[t]	–[t]	1·3	2·6	493[ae]	O	*Petunia*[e]	FC:PI
1843a	*Rubus alceifolius* Poir.	Yes	Rosaceae	E	28	4	P	841	0·9	1·7	3·4	493[ae]	O	*Petunia*[e]	FC:PI
1844a	*Rubus canadensis* L.	No	Rosaceae	E	14[o]	2	P	289	0·3	0·6	1·2	600	O	Trout[f]	FC:PI
1845a	*Rubus canescens* DC.	No	Rosaceae	E	14[o]	2	P	357	0·4	0·7	1·5	600	O	Trout[f]	FC:PI
1846a	*Rubus chamaemorus* L.	–[m]	Rosaceae	E	56	8	P	1,203	1·2	2·5	4·9	499	O	H[c]	FC:PI
1847a	*Rubus crataegifolius* Bunge	No	Rosaceae	E	14[o]	2	P	240	0·2	0·5	1·0	600	O	Trout[f]	FC:PI
1848a	*Rubus ellipticus* Sm.	No	Rosaceae	E	14[o]	2	P	337	0·3	0·7	1·4	600	O	Trout[f]	FC:PI
1849a	*Rubus hispidus* L.	No	Rosaceae	E	14[o]	2	P	289	0·3	0·6	1·2	600	O	Trout[f]	FC:PI
1850a	*Rubus illecebrosus* Focke	No	Rosaceae	E	14[o]	2	P	230	0·2	0·5	0·9	600	O	Trout[f]	FC:PI
1851a	*Rubus innominatus* S.Moore	No	Rosaceae	E	14[o]	2	P	264	0·3	0·5	1·1	600	O	Trout[f]	FC:PI
1852a	*Rubus lasiococcus* A.Gray	No	Rosaceae	E	14[o]	2	P	337	0·3	0·7	1·4	600	O	Trout[f]	FC:PI
1853a	*Rubus lasiostylus* Focke	No	Rosaceae	E	14[o]	2	P	303	0·3	0·6	1·2	600	O	Trout[f]	FC:PI
1854a	*Rubus leucodermis* Doug ex Torrey & Gray	No	Rosaceae	E	14[o]	2	P	249	0·3	0·5	1·0	600	O	Trout[f]	FC:PI
1855a	*Rubus nivalis* Douglas ex Hook.	No	Rosaceae	E	14[o]	2	P	274	0·3	0·6	1·1	600	O	Trout[f]	FC:PI
1856a	*Rubus niveus* Thunb.	No	Rosaceae	E	14[o]	2	P	279	0·3	0·6	1·1	600	O	Trout[f]	FC:PI
1857a	*Rubus occidentalis* L.	No	Rosaceae	E	14[o]	2	P	293	0·3	0·6	1·2	600	O	Trout[f]	FC:PI
1858b	*Rubus odoratus* L.	No	Rosaceae	E	14[o]	2	P	313	0·3	0·6	1·3	600	O	Trout[f]	FC:PI
1859a	*Rubus parviflorus* L.	No	Rosaceae	E	14[o]	2	P	264	0·3	0·5	1·1	600	O	Trout[f]	FC:PI
1860a	*Rubus parvifolius* L.	No	Rosaceae	E	14[o]	2	P	259	0·3	0·5	1·1	600	O	Trout[f]	FC:PI

1861a	*Rubus pinfaensis* Lev. & Vaniot	No	Rosaceae	E	14[o]	2	P	289	0·3	0·6	1·2	600	O	Trout[f]	FC:PI
1862a	*Rubus sanctus* Schreb.	No	Rosaceae	E	14[o]	2	P	367	0·4	0·8	1·5	600	O	Trout[f]	FC:PI
1863a	*Rubus simplex* Focke	No	Rosaceae	E	14[o]	2	P	254	0·3	0·5	1·0	600	O	Trout[f]	FC:PI
1864a	*Rubus spectabilis* Pursh	No	Rosaceae	E	14[o]	2	P	264	0·3	0·5	1·1	600	O	Trout[f]	FC:PI
1865a	*Rubus trivialis* Michx.	No	Rosaceae	E	14[o]	2	P	347	0·4	0·7	1·4	600	O	Trout[f]	FC:PI
1866b	*Rumex acetosa* L. (female)	Yes	Polygonaceae	E	14	2	P	3,423	3·5	7·0	14·0	573	O	H[c]	FC:PI
1866c	*Rumex acetosa* L. (male)	Yes	Polygonaceae	E	15	2	P	3,668	3·8	7·5	15·0	573	O	H[c]	FC:PI
1867a	*Rumex lunaria* L.	–[m]	Polygonaceae	E	36[o]	4	P	6,098	6·2	12·5	24·9	477	O	G[c]	FC:PI
1868a	*Rumex maderensis* Lowe	–[m]	Polygonaceae	E	20[o]	2	P	675	0·7	1·4	2·8	477	O	*Solan.*[e]	FC:PI
1869a	*Rumex nivalis* Hegetschw. (female)[h]	No	Polygonaceae	E	14	2	P	3,296	3·4	6·7	13·5	559	O	*Epilob.*[e]	FC:PI
1869b	*Rumex nivalis* Hegetschw. (male)[h]	No	Polygonaceae	E	15	2	P	3,623	3·7	7·4	14·8	559	O	*Epilob.*[e]	FC:PI
1870a	*Ruppia cirrhosa* (Petagna) Grande	Yes	Ruppiaceae	M	40[o]	4	P	2,274	2·3	4·7	9·3	580	O	G[c]	CIA
1871a	*Rytidosperma biannulare* (Zotov) Connor & Edgar	Yes	Poaceae[j]	M	48	4	P	3,941	4·0	8·1	16·1	528	O	–[w]	FC:PI
1871b	*Rytidosperma biannulare* (Zotov) Connor & Edgar	Yes	Poaceae[j]	M	48	4	P	2,690	2·8	5·5	11·0	476	O	*Actinidia*[e]	FC:PI
1872a	*Rytidosperma buchananii* (Hook.f.) Connor & Edgar	Yes	Poaceae[j]	M	48	4	P	3,457	3·5	7·1	14·1	528	O	–[w]	FC:PI
1873a	*Rytidosperma clavatum* (Zotov) Connor & Edgar	Yes	Poaceae[j]	M	24	2	P	1,623	1·7	3·3	6·6	528	O	–[w]	FC:PI
1873b	*Rytidosperma clavatum* (Zotov) Connor & Edgar[i]	Yes	Poaceae[j]	M	24	2	P	1,223	1·3	2·5	5·0	476	O	*Actinidia*[e]	FC:PI
1874a	*Rytidosperma corinum* Connor & Edgar	Yes	Poaceae[j]	M	48	4	P	3,516	3·6	7·2	14·4	528	O	–[w]	FC:PI
1875a	*Rytidosperma gracile* (Hook.f.) Connor & Edgar	Yes	Poaceae[j]	M	24	2	P	1,213	1·2	2·5	5·0	528	O	–[w]	FC:PI
1875b	*Rytidosperma gracile* (Hook.f.) Connor & Edgar	Yes	Poaceae[j]	M	24	2	P	929	1·0	1·9	3·8	476	O	*Actinidia*[e]	FC:PI
1876a	*Rytidosperma horrens* Connor & Molloy	Yes	Poaceae[j]	M	24	2	P	1,790	1·8	3·7	7·3	528	O	–[w]	FC:PI
1877a	*Rytidosperma maculatum* (Zotov) Connor & Edgar	Yes	Poaceae[j]	M	48	4	P	2,954	3·0	6·0	12·1	528	O	–[w]	FC:PI
1877b	*Rytidosperma maculatum* (Zotov) Connor & Edgar	Yes	Poaceae[j]	M	48	4	P	2,152	2·2	4·4	8·8	476	O	*Actinidia*[e]	FC:PI
1878a	*Rytidosperma petrosum* Connor & Edgar	Yes	Poaceae[j]	M	48	4	P	4,039	4·1	8·3	16·5	528	O	–[w]	FC:PI
1879a	*Rytidosperma pumilum* (Kirk) Connor & Edgar	Yes	Poaceae[j]	M	24	2	P	1,584	1·6	3·2	6·5	528	O	–[w]	FC:PI
1880a	*Rytidosperma setifolium* (Hook.f.) Connor & Edgar[i]	Yes	Poaceae[j]	M	24	2	P	2,425	2·5	5·0	9·9	528	O	–[w]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
1880b	*Rytidosperma setifolium* (Hook.f.) Connor & Edgar	Yes	Poaceae[j]	M	24	2	P	1,614	1·7	3·3	6·6	476	O	*Actinidia*[e]	FC:PI
1881a	*Rytidosperma telmaticum* Connor & Molloy[i]	Yes	Poaceae[j]	M	24	2	P	1,384	1·4	2·8	5·7	528	O	–[w]	FC:PI
1881b	*Rytidosperma telmaticum* Connor & Molloy[i]	Yes	Poaceae[j]	M	24	2	P	1,677	1·7	3·4	6·9	528	O	–[w]	FC:PI
1882a	*Rytidosperma thomsonii* (Buchanan) Connor & Edgar[i]	Yes	Poaceae[j]	M	24	2	P	1,716	1·8	3·5	7·0	528	O	–[w]	FC:PI
1883a	*Rytidosperma thomsonii* (Buchanan) Connor & Edgar[i]	Yes	Poaceae[j]	M	48	4	P	3,066	3·1	6·3	12·5	528	O	–[w]	FC:PI
1884a	*Rytidosperma unarede* (Raoul) Connor & Edgar	Yes	Poaceae[j]	M	48	4	P	2,494	2·6	5·1	10·2	476	O	*Actinidia*[e]	FC:PI
1885a	*Rytidosperma viride* (Zotov) Connor & Edgar	Yes	Poaceae[j]	M	24	2	P	1,350	1·4	2·8	5·5	528	O	–[w]	FC:PI
1886a	*Saintpaulia ionantha* H.Wendl.	No	Gesneriaceae	E	–[n]	–[p]	P	734	0·8	1·5	3·0	563	O	*Solan.*[e]	FC:PI
1887a	*Salicornia europaea* L.	Yes	Amaranthaceae	E	18[o]	2	A	1,345	1·4	2·8	5·5	580	O	G[c]	CIA
1888b	*Salix atrocinerea* Brot.	Yes	Salicaceae	E	–[n]	–[p]	P	782	0·8	1·6	3·2	489	O	–[w]	FC:EB
1889a	*Salix babylonica* L.	Yes	Salicaceae	E	–[n]	–[p]	P	748	0·8	1·5	3·1	489	O	–[w]	FC:EB
1889b	*Salix babylonica* L.	No	Salicaceae	E	–[n]	–[p]	P	787	0·8	1·6	3·2	563	O	*Solan.*[e]	FC:PI
1890a	*Salsola kali* L.	–[m]	Amaranthaceae	E	–[n]	–[p]	–[q]	597	0·6	1·2	2·4	526	O	A	FC:PI
1891a	*Salsola soda* L.	Yes	Amaranthaceae[k]	E	18[o]	2	A	1,281	1·3	2·6	5·2	580	O	G[c]	CIA
1892a	*Salvadora persica* L.	No	Salvadoraceae	E	24[o]	–[p]	P	411	0·4	0·8	1·7	612	O	*Solan.*[e]	FC:PI
1893a	*Salvia brachyodon* Vandas	Yes	Lamiaceae[j]	E	14	2	P	465	0·5	1·0	1·9	549	O	*Petunia*[e]	FC:PI
1894a	*Salvia broussonetii* Bentham	–[m]	Lamiaceae[j]	E	22[o]	2	P	421	0·4	0·9	1·7	477	O	*Raphanus*[e]	FC:PI
1895a	*Salvia canariensis* L.	–[m]	Lamiaceae[j]	E	22[o]	2	P	484	0·5	1·0	2·0	552	O	*Raphanus*[e]	FC:PI
1896a	*Salvia officinalis* L.	Yes	Lamiaceae[j]	E	14	2	P	474	0·5	1·0	1·9	549	O	*Petunia*[e]	FC:PI
1897a	*Sapindus emarginatus* Vahl	No	Sapindaceae	E	30[o]	2	P	518	0·5	1·1	2·1	501[ag]	O	B[c]	Fe
1898a	*Sarcocornia fruiticosa* (L.) A.J.Scott	Yes	Amaranthaceae	E	54[o]	6	P	2,890	3·0	5·9	11·8	580	O	G[c]	CIA
1899a	*Sarracenia flava* L.	No[m]	Sarraceniaceae	E	26	–[p]	P	4,249	4·3	8·7	17·4	612	O	G	FC:PI
1900a	*Schizogyne glaberrima* DC.	–[m]	Asteraceae[j]	E	18[o]	2	P	1,002	1·0	2·1	4·1	477	O	*Glycine*[e]	FC:PI
1901a	*Schizogyne sericea* (L.f.) DC.	–[m]	Asteraceae[j]	E	18[o]	2	P	1,002	1·0	2·1	4·1	477	O	*Glycine*[e]	FC:PI
1902a	*Schouwia purpurea* (Forssk.) Schweinf.	No	Brassicaceae[j]	E	36	2	A	871	0·9	1·8	3·6	602	O	*Solan.*[e]	FC:PI
1903c	*Scilla autumnalis* L. (race B5B5)	No	Asparagaceae	M	10	2	P	4,890	5·0	10·0	20·0	601	O	C[d]	Fe
1903d	*Scilla autumnalis* L. (race C6C6)	No	Asparagaceae	M	12	2	P	6,846	7·0	14·0	28·0	601	O	C[d]	Fe

1903e	*Scilla autumnalis* L. (race B7B7)	No	Asparagaceae	M	14	2	P	5,624	5·8	11·5	23·0	601	O	C[d]	Fe
1903f	*Scilla autumnalis* L. (race AA)	No	Asparagaceae	M	14	2	P	8,313	8·5	17·0	34·0	601	O	C[d]	Fe
1904a	*Scilla dasyantha* Webb & Berthel.	–[m]	Asparagaceae[k]	M	28	4	P	9,311	9·5	19·0	38·1	552	O	G[c]	FC:PI
1905a	*Scilla haemorrhoidalis* Webb & Berthel.	–[m]	Asparagaceae[k]	M	28[o]	4	P	9,227	9·4	18·9	37·7	552	O	G[c]	FC:PI
1906a	*Sclerochloa dura* (L.) P.Beauv.	–[m]	Poaceae[j]	M	14[o]	2	P	1,524	1·6	3·1	6·2	555	O	G[c]	FC:PI
1907a	*Sclerolaena diacantha* (Nees) Benth.	–[m]	Amaranthaceae	E	–[n]	–[p]	–[q]	1,208	1·2	2·5	4·9	526	O	A	FC:PI
1908a	*Scoliopus bigelovii* Torr.	Yes	Liliaceae	M	16	2	P	8,998	9·2	18·4	36·8	565	O	B	FC:PI
1909a	*Scrophularia glabrata* Ait.	–[m]	Scrophulariaceae	E	56[o]	8	P	1,007	1·0	2·1	4·1	477	O	*Glycine*[e]	FC:PI
1910a	*Scrophularia smithii* Hornem. subsp. *langeana* (Bolle) Dalgaard	–[m]	Scrophulariaceae	E	58[o]	8	P	1,012	1·0	2·1	4·1	552	O	*Glycine*[e]	FC:PI
1910b	*Scrophularia smithii* Hornem. subsp. *smithii*	–[m]	Scrophulariaceae	E	58[o]	8	P	1,017	1·0	2·1	4·2	477	O	*Glycine*[e]	FC:PI
1911n	*Secale cereale* L.	Yes	Poaceae[j]	M	–[n]	–[p]	A	7,829	8·0	16·0	32·0	492	O	G[c]	FC:PI
1911o	*Secale cereale* L.	No[m1]	Poaceae[j]	M	14	2	A	8,460	8·7	17·3	34·6	605	O	F[c]	FC:PI
1911p	*Secale cereale* L. cv. Malish 72	No	Poaceae[j]	M	14[o]	2	A	7,858	8·0	16·1	32·1	610	C	A[c]	Fe
1912d	*Secale montanum* Guss.	No[m1]	Poaceae[j]	M	14	2	P	9,242	9·5	18·9	37·8	605	O	F[c]	FC:PI
1913d	*Secale vavilovii* Grossh.	No[m1]	Poaceae[j]	M	14	2	A	8,518	8·7	17·4	34·8	605	O	F[c]	FC:PI
1914a	*Sedum burrito* Moran	No	Crassulaceae	E	–[n]	–[p]	–[q]	636	0·7	1·3	2·6	587	O	*Solan.*[e]	FC:PI
1915a	*Semele androgyna* (L.) Kunth[i]	Yes	Asparagaceae	M	30[o]	2	P	5,770	5·9	11·8	23·6	490	O	G	FC:EB
1915b	*Semele androgyna* (L.) Kunth	–[m]	Asparagaceae[k]	M	40[o]	4	P	6,333	6·5	13·0	25·9	552	O	G[c]	FC:PI
1916a	*Semele maderensis* G.Costa[i]	Yes	Asparagaceae	M	30[o]	2	P	5,575	5·7	11·4	22·8	490	O	G	FC:EB
1917a	*Semele menezesi* G.Costa[i]	Yes	Asparagaceae	M	30[o]	2	P	5,672	5·8	11·6	23·2	490	O	G	FC:EB
1918a	*Semele pterygophora* G.Costa[i]	Yes	Asparagaceae	M	30[o]	2	P	5,624	5·8	11·5	23·0	490	O	G	FC:EB
1919a	*Senecio inaequidens* DC. (s.l.)[h]	Yes	Asteraceae[j]	E	20	2	P	562	0·6	1·2	2·3	539[ap]	O	*Medicago*[e]	FC:PI
1919b	*Senecio inaequidens* DC. (s.l.)[h]	Yes	Asteraceae[j]	E	20	2	P	763	0·8	1·6	3·1	539[ap]	O	*Medicago*[e]	FC:PI
1920a	*Senecio inaequidens* DC. (s.l.)[h]	Yes	Asteraceae[j]	E	40	4	P	1,051	1·1	2·2	4·3	539[ap]	O	*Medicago*[e]	FC:PI
1920b	*Senecio inaequidens* DC. (s.l.)[h]	Yes	Asteraceae[j]	E	40	4	P	1,262	1·3	2·6	5·2	539[ap]	O	*Medicago*[e]	FC:PI
1921a	*Senecio palmensis* (Chr. Sm. in Buch) Link	–[m]	Asteraceae[j]	E	20	2	P	958	1·0	2·0	3·9	477	O	*Glycine*[e]	FC:PI
1922a	*Senecio teneriffae* Sch.Bip. ex Bolle	–[m]	Asteraceae[j]	E	60[o]	6	A	2,572	2·6	5·3	10·5	477	O	G[c]	FC:PI
1923a	*Senna artemisioides*[l]	–[m]	Fabaceae[j]	E	–[n]	–[p]	–[q]	1,208	1·2	2·5	4·9	526	O	A	FC:PI
1924a	*Seseli webbii* Coss.	–[m]	Apiaceae[j]	E	22[o]	2	P	1,853	1·9	3·8	7·6	477	O	*Glycine*[e]	FC:PI
1925d	*Sesleria albicans* Kit. ex Schult.[h]	Yes	Poaceae[j]	M	28	4	P	4,738	4·8	9·7	19·4	579	O	*Homo*[f]	FC:PI
1925e	*Sesleria albicans* Kit. ex Schult.[h]	Yes	Poaceae[j]	M	28	4	P	4,817	4·9	9·9	19·7	579	O	*Homo*[f]	FC:PI
1926a	*Sideritis brevicaulis* Mend.-Heuer	–[m]	Lamiaceae[j]	E	36 (38, 40)[o]	4	P	1,785	1·8	3·7	7·3	552	O	*Glycine*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
1927a	*Sideritis canariensis* L.	–[m]	Lamiaceae[j]	E	44[o]	4	P	1,741	1·8	3·6	7·1	477	O	*Glycine*[e]	FC:PI
1928a	*Sideritis cretica* L. subsp. *cretica*	–[m]	Lamiaceae[j]	E	44 (34)[o]	4	P	2,010	2·1	4·1	8·2	552	O	*Glycine*[e]	FC:PI
1929a	*Sideritis dendro-chahorra* Bolle	–[m]	Lamiaceae[j]	E	38-42[o]	4	P	1,775	1·8	3·6	7·3	552	O	*Glycine*[e]	FC:PI
1930a	*Sideritis infernalis* Bolle	–[m]	Lamiaceae[j]	E	40[o]	4	P	1,770	1·8	3·6	7·2	552	O	*Glycine*[e]	FC:PI
1931a	*Sideritis macrostachys* Poir.	–[m]	Lamiaceae[j]	E	~36	4	P	1,971	2·0	4·0	8·1	477	O	*Glycine*[e]	FC:PI
1932a	*Sideritis oroteneriffae* Negrín & Pérez var. *oroteneriffae*	–[m]	Lamiaceae[j]	E	44[o]	4	P	1,785	1·8	3·7	7·3	477	O	*Glycine*[e]	FC:PI
1933a	*Siebera pungens* J.Gay	Yes	Asteraceae[j]	E	20	2	A	8,303	8·5	17·0	34·0	502	O	F[b2]	FC:PI
1934a	*Silene berthelotiana* Webb	–[m]	Caryophyllaceae	E	24	2	P	2,499	2·6	5·1	10·2	477	O	G[c]	FC:PI
1935a	*Silene lagunensis* Chr. Sm. ex Christ	–[m]	Caryophyllaceae	E	24	2	P	2,538	2·6	5·2	10·4	477	O	G[c]	FC:PI
1936a	*Silene nocteolens* Webb & Berth.	–[m]	Caryophyllaceae	E	24	2	P	2,523	2·6	5·2	10·3	477	O	G[c]	FC:PI
1937a	*Silene pogonocalyx* (Svent.) Bramw.	–[m]	Caryophyllaceae	E	24	2	P	2,557	2·6	5·2	10·5	477	O	G[c]	FC:PI
1938a	*Simarouba glauca* DC.	No	Simaroubaceae	E	–[n]	–[p]	P	1,002	1·0	2·1	4·1	501[ag]	O	B[c]	Fe
1939a	*Simplicia buchananii* (Zotov) Zotov	Yes	Poaceae[j]	M	28	4	P	5,413	5·5	11·1	22·1	528	O	–[w]	FC:PI
1940a	*Simplicia laxa* Kirk	Yes	Poaceae[j]	M	28	4	P	5,007	5·1	10·2	20·5	528	O	–[w]	FC:PI
1941a	*Sinapidendron angustifolium* (DC.) Lowe	–[m]	Brassicaceae[j]	E	20[o]	2	P	518	0·5	1·1	2·1	552	O	*Solan.*[e]	FC:PI
1942a	*Sinapidendron frutescens* Lowe	Yes	Brassicaceae[j]	E	20	–[p]	–[q]	548	0·6	1·1	2·2	599	O	L	FC:PI
1943a	*Sinapidendron gymnocalyx* (Lowe) Rustan	–[m]	Brassicaceae[j]	E	20[o]	2	P	523	0·5	1·1	2·1	552	O	*Solan.*[e]	FC:PI
1944b	*Sinapis alba* L.	–[m]	Brassicaceae[j]	E	24[o]	–[p]	A	554	0·6	1·1	2·3	509	O	–[w]	FC:PI
1945b	*Sinapis arvensis* L.	No	Brassicaceae[j]	E	–[n]	–[p]	A	660	0·7	1·4	2·7	492	O	*Glycine*[e]	FC:PI
1946a	*Sisymbrella dentata* (L.) O.E.Schulz	Yes	Brassicaceae[j]	E	32	–[p]	–[q]	352	0·4	0·7	1·4	599	O	L	FC:PI
1947a	*Sisymbrium austriacum* Jacq.	Yes	Brassicaceae[j]	E	14	2	–[q]	352	0·4	0·7	1·4	599	O	L	FC:PI
1948a	*Sisymbrium irio* L.	–[m]	Brassicaceae[j]	E	28	4	–[q]	521	0·5	1·1	2·1	509	O	–[w]	FC:PI
1949a	*Sisymbrium officinale* L.	Yes	Brassicaceae[j]	E	14	2	–[q]	235	0·2	0·5	1·0	599	O	L	FC:PI
1950a	*Sisymbrium orientale* L.	–[m]	Brassicaceae[j]	E	14	–[p]	–[q]	305	0·3	0·6	1·2	509	O	–[w]	FC:PI
1951a	*Sonchus acaulis* Dum.-Cours.	–[m]	Asteraceae[j]	E	18[o]	2	P	1,399	1·4	2·9	5·7	477	O	*Solan.*[e]	FC:PI
1952a	*Sonchus canariensis* (Sch. Bip.) Boulos subsp. *canariensis*	–[m]	Asteraceae[j]	E	18[o]	2	P	1,403	1·4	2·9	5·7	552	O	*Solan.*[e]	FC:PI
1953a	*Sonchus capillaris* Svent.	–[m]	Asteraceae[j]	E	18	2	P	1,447	1·5	3·0	5·9	552	O	*Solan.*[e]	FC:PI
1954a	*Sonchus congestus* Willd.	–[m]	Asteraceae[j]	E	18[o]	2	P	1,403	1·4	2·9	5·7	477	O	*Solan.*[e]	FC:PI
1955a	*Sonchus fauces-orci* Knoche	–[m]	Asteraceae[j]	E	–[n]	(2)	P	1,658	1·7	3·4	6·8	552	O	*Solan.*[e]	FC:PI

1956a	*Sonchus gummifer* Link[i]	–[m]	Asteraceae[j]	E	18[o]	2	P	1,320	1·4	2·7	5·4	552	O	*Solan.*[e]	FC:PI
1957a	*Sonchus hierrensis* (Pit.) Boulos var. *benehoavensis* Svent.	–[m]	Asteraceae[j]	E	18[o]	2	P	1,345	1·4	2·8	5·5	552	O	*Solan.*[e]	FC:PI
1958a	*Sonchus leptocephalus* Cass	Yes	Asteraceae[j]	E	18[o]	2	P	1,438	1·5	2·9	5·9	522	O	*Solan.*[e]	FC:PI
1959a	*Sonchus radicatus* Ait.	–[m]	Asteraceae[j]	E	18	2	P	1,281	1·3	2·6	5·2	477	O	*Solan.*[e]	FC:PI
1960a	*Sophora japonica* L.	No	Fabaceae[j]	E	–[n]	–[p]	P	655	0·7	1·3	2·7	492	O	*Glycine*[e]	FC:PI
1961a	*Sophora mollis* Grahm & Baker	No	Fabaceae[j]	E	18[o]	2	P	1,995	2·0	4·1	8·2	501[ag]	O	B[c]	Fe
1962a	*Sorbus aucuparia* L.	Yes	Rosaceae	E	–[n]	–[p]	P	636	0·7	1·3	2·6	489	O	–[w]	FC:EB
1963a	*Sorghum amplum* Lazarides	Yes	Poaceae[j]	M	30	–[p]	A	3,760	3·8	7·7	15·4	511	O	*Lupinus tex.*[e]	FC:PI
1964a	*Sorghum angustum* S.T.Blake	Yes	Poaceae[j]	M	10	–[p]	A	1,809	1·9	3·7	7·4	511	O	*Lupinus tex.*[e]	FC:PI
1965k	*Sorghum bicolor* (L.) Moench line Tx623	No	Poaceae[j]	M	20	2	A	817	0·8	1·7	3·3	511	O	*Lupinus tex.*[e]	FC:PI
1965l	*Sorghum bicolor* (L.) Moench line Pioneer 8695	No	Poaceae[j]	M	20	2	A	817	0·8	1·7	3·3	511	O	*Lupinus tex.*[e]	FC:PI
1965m	*Sorghum bicolor* (L.) Moench genotype BTx623	No	Poaceae	M	20[o]	2	A	729	0·7	1·5	3·0	614	O	–[ax]	GS
1966a	*Sorghum brachypodum* Lazarides	Yes	Poaceae[j]	M	10	–[p]	A	1,643	1·7	3·4	6·7	511	O	*Lupinus tex.*[e]	FC:PI
1967a	*Sorghum bulbosum* Lazarides	Yes	Poaceae[j]	M	10	–[p]	A	1,125	1·2	2·3	4·6	511	O	L	FC:PI
1968a	*Sorghum ecarinatum* Lazarides	Yes	Poaceae[j]	M	10	–[p]	A	1,027	1·1	2·1	4·2	511	O	L	FC:PI
1969a	*Sorghum exstans* Lazarides	Yes	Poaceae[j]	M	10	–[p]	A	1,345	1·4	2·8	5·5	511	O	*Lupinus tex.*[e]	FC:PI
1970b	*Sorghum halepense* (L.) Pers.[i]	No	Poaceae[j]	M	40	–[p]	P	1,604	1·6	3·3	6·6	511	O	*Lupinus tex.*[e]	FC:PI
1971a	*Sorghum interjectum* Lazarides	Yes	Poaceae[j]	M	30	–[p]	P	3,565	3·6	7·3	14·6	511	O	*Sorghum*[e]	FC:PI
1972a	*Sorghum intrans* F.Muell. ex Benth.	Yes	Poaceae[j]	M	10	–[p]	A	1,115	1·1	2·3	4·6	511	O	L	FC:PI
1973a	*Sorghum laxiflorum* Bailey	Yes	Poaceae[j]	M	40	–[p]	A	1,218	1·2	2·5	5·0	511	O	L	FC:PI
1974a	*Sorghum leiocladum* (Hack.) C.E.Hubb.	Yes	Poaceae[j]	M	10	–[p]	P	2,249	2·3	4·6	9·2	511	O	*Lupinus tex.*[e]	FC:PI
1975a	*Sorghum macrospermum* Garber	Yes	Poaceae[j]	M	40	–[p]	A	1,012	1·0	2·1	4·1	511	O	L	FC:PI
1976a	*Sorghum matarankense* Garber & Snyder	Yes	Poaceae[j]	M	10	–[p]	A	1,227	1·3	2·5	5·0	511	O	L	FC:PI
1977a	*Sorghum nitidum* (Vahl.) Pers.	Yes	Poaceae[j]	M	20	–[p]	P	4,298	4·4	8·8	17·6	511	O	*Lupinus tex.*[e]	FC:PI
1978a	*Sorghum plumosum* (R.Br.) P.Beauv.	Yes	Poaceae[j]	M	30	–[p]	P	3,741	3·8	7·7	15·3	511	O	*Lupinus tex.*[e]	FC:PI
1979a	*Sorghum plumosum* (R.Br.) P.Beauv.	Yes	Poaceae[j]	M	40	–[p]	P	5,037	5·2	10·3	20·6	511	O	*Sorghum*[e]	FC:PI
1980a	*Sorghum propinquum* (Kunth) Hitch.	No	Poaceae[j]	M	20	–[p]	P	743	0·8	1·5	3·0	511	O	*Lupinus tex.*[e]	FC:PI
1981a	*Sorghum purpureosericeum* (A.Rich) Aschers & Schweinf	Yes	Poaceae[j]	M	10	–[p]	A	2,044	2·1	4·2	8·4	511	O	*Lupinus tex.*	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
1982a	*Sorghum stipoideum* (Ewart & Jean White) C.Gardner & C.E.Hubb.	Yes	Poaceae[j]	M	10	–[p]	A	1,071	1·1	2·2	4·4	511	O	L	FC:PI
1983a	*Sorghum timorense* (Kunth) Buse	Yes	Poaceae[j]	M	10	–[p]	A	621	0·6	1·3	2·5	511	O	*Sorghum*[e]	FC:PI
1984b	*Sorghum versicolor* Anderss.	No	Poaceae[j]	M	10	2	A	1,589	1·6	3·3	6·5	511	O	*Sorghum*[e]	FC:PI
1985a	*Sorghum versicolor* Anderss.	No	Poaceae[j]	M	20	4	A	3,262	3·3	6·7	13·3	511	O	*Lupinus tex.*[e]	FC:PI
1986a	*Spartocytisus filipes* Webb & Berthel.	–[m]	Fabaceae[j]	E	48[o]	4	P	1,125	1·2	2·3	4·6	552	O	*Glycine*[e]	FC:PI
1987a	*Spartocytisus supranubius* (L.f.) Christ ex G.Kunkel	–[m]	Fabaceae[j]	E	48 + 0-4B[o]	4	P	1,090	1·1	2·2	4·5	552	O	*Glycine*[e]	FC:PI
1988d	*Spinacia oleracea* L.	No	Amaranthaceae[k]	E	–[n]	–[p]	A	1,315	1·3	2·7	5·4	492	O	*Raphanus*[e]	FC:PI
1989a	*Spinifex sericeus* R.Br.	Yes	Poaceae[j]	M	18	2	P	2,645	2·7	5·4	10·8	528	O	–[w]	FC:PI
1990a	*Stachys grandiflora* (Willd.) Benth.	No	Lamiaceae[j]	E	–[n]	–[p]	P	6,098	6·2	12·5	24·9	492	O	G[c]	FC:PI
1991a	*Stachyurus praecox* Siebold & Zucc.	No	Stachyuraceae	E	24	–[p]	P	347	0·4	0·7	1·4	612	O	J	Fe
1992a	*Staehelina dubia* L.	Yes	Asteraceae[j]	E	30	2	P	768	0·8	1·6	3·1	502	O	*Petunia*[e]	FC:PI
1993a	*Staehelina fruticosa* (L.) L.	Yes	Asteraceae[j]	E	34	2	P	1,081	1·1	2·2	4·4	502	O	*Petunia*[e]	FC:PI
1994a	*Staehelina petiolata* (L.) Hilliard & B.L.Burtt	Yes	Asteraceae[j]	E	34	2	P	729	0·7	1·5	3·0	502	O	*Petunia*[e]	FC:PI
1995a	*Stahlianthus involucratus* (King ex Baker) Craib ex Loes.	Yes	Zingiberaceae	M	22[o]	2	P	1,521	1·6	3·1	6·2	562	O	*Glycine*[e]	FC:PI
1996a	*Staphylea bumalda* DC.	No	Staphyleaceae	E	26	–[p]	P	1,677	1·7	3·4	6·9	612	O	J	Fe
1997a	*Stemmacantha cynaroides* (C.Sm. in Buch) Dittrich	–[m]	Asteraceae[j]	E	–[n]	–[p]	P	1,051	1·1	2·2	4·3	552	O	*Glycine*[e]	FC:PI
1998a	*Stenostachys deceptorix* Connor	Yes	Poaceae[j]	M	28	4	P	9,496	9·7	19·4	38·8	528	O	–[w]	FC:PI
1999a	*Stenostachys gracilis* (Hook.f.) Connor	Yes	Poaceae[j]	M	28	4	P	8,758	9·0	17·9	35·8	528	O	–[w]	FC:PI
2000a	*Stenostachys laevis* (Petrie) Connor	Yes	Poaceae[j]	M	28	4	P	9,208	9·4	18·8	37·7	528	O	–[w]	FC:PI
2001a	*Streptanthus polygaloides* A.Gray[i]	Yes	Brassicaceae[j]	E	28	2	B	675	0·7	1·4	2·8	540	O	*Raphanus*[e]	FC:PI
2002a	*Streptopus amplexifolius* (L.) DC.	Yes	Liliaceae	M	–[n]	–[p]	P	6,406	6·6	13·1	26·2	565	O	G	FC:PI
2003a	*Strychnos nux-vomica* L.	Yes	Loganiaceae	E	–[n]	–[p]	P	418	0·4	0·9	1·7	612	O	*Solan.*[e]	FC:PI
2004a	*Suaeda maritima* (L.) Dum.	Yes	Amaranthaceae	E	36[o]	4	A	1,032	1·1	2·1	4·2	580	O	G[c]	CIA
2005a	*Syrenia cuspidata* (M.Bieb.) Rchb.	Yes	Brassicaceae[j]	E	–[n]	–[p]	–[q]	411	0·4	0·8	1·7	599	O	L	FC:PI
2006a	*Syzygium cumini* L. Skeels	No	Myrtaceae	E	22[o]	2	P	1,785	1·8	3·7	7·3	501[ag]	O	B[c]	Fe

2007a	*Tabebuia palmeri* Rose	No[m]	Bignoniaceae	E	–[n]	–[p]	P	1,186	1·2	2·4	4·9	501[ag]	O	B[c]	Fe
2008a	*Tamarix africana*[l]	No	Tamaricaceae	E	–[n]	–[p]	P	1,614	1·7	3·3	6·6	563	O	H[c]	FC:PI
2009a	*Tanacetopsis goloskokovii* (Poljakov) Karmysch.	Yes	Asteraceae[j]	E	18	2	P	4,758	4·9	9·7	19·5	521	O	*Petunia*[e]	FC:PI
2010a	*Taraxacum albidum* Dahlst.	Yes	Asteraceae[j]	E	32	4	P	3,379	3·5	6·9	13·8	514	O	H[c]	FC:PI
2011a	*Taraxacum bessarabicum* (Hornem.) Hand.-Mazz.	Yes	Asteraceae[j]	E	16	2	P	1,086	1·1	2·2	4·4	514	O	H[c]	FC:PI
2012a	*Taraxacum brachyglossum* Dahlst.	Yes	Asteraceae[j]	E	24	3[z]	P	–[t]	–[t]	2·6	5·2	514	O	H[c]	FC:PI
2013a	*Taraxacum fartoris* Kirschner & Štěpánek	Yes	Asteraceae[j]	E	32	4	P	1,804	1·8	3·7	7·4	514	O	H[c]	FC:PI
2014a	*Taraxacum glaciale* É.Huet & A.Huet ex Hand.-Mazz.	Yes	Asteraceae[j]	E	16	2	P	939	1·0	1·9	3·8	514	O	H[c]	FC:PI
2015a	*Taraxacum linearisquameum* Soest	Yes	Asteraceae[j]	E	16	2	P	866	0·9	1·8	3·5	514	O	H[c]	FC:PI
2016a	*Taraxacum obovatum* (Willd.) DC.	Yes	Asteraceae[j]	E	32	4	P	2,318	2·4	4·7	9·5	514	O	H[c]	FC:PI
2017a	*Taraxacum paludosum* (Scop.) Schltr.	Yes	Asteraceae[j]	E	32	4	P	1,976	2·0	4·0	8·1	514	O	H[c]	FC:PI
2018a	*Taraxacum serotinum* (Waldst. & Kit.) Poir.	Yes	Asteraceae[j]	E	16	2	P	1,394	1·4	2·9	5·7	514	O	H[c]	FC:PI
2019a	*Taraxacum stenocephalum* Boiss & Kotschy	Yes	Asteraceae[j]	E	32	4	P	2,005	2·1	4·1	8·2	514	O	H[c]	FC:PI
2020a	*Taraxacum tenuifolium* (Hoppe & Hornsch.) W.D.J.Koch	Yes	Asteraceae[j]	E	16	2	P	1,110	1·1	2·3	4·5	514	O	H[c]	FC:PI
2021a	*Tauscheria lasiocarpa* Fisch. ex DC.	Yes	Brassicaceae[j]	E	14	2	–[q]	313	0·3	0·6	1·3	599	O	L	FC:PI
2022a	*Teesdalia nudicalis* (L.) R.Br.	Yes	Brassicaceae[j]	E	36	–[p]	–[q]	597	0·6	1·2	2·4	599	O	L	FC:PI
2023a	*Teline canariensis* (L.) Webb. & Berth.	–[m]	Fabaceae[j]	E	48	4	P	1,467	1·5	3·0	6·0	477	O	*Glycine*[e]	FC:PI
2024a	*Teline osyroides* (Svent.) P.E.Gibbs & Dingwall subsp. *osyroides*	–[m]	Fabaceae[j]	E	48[o]	4	P	1,007	1·0	2·1	4·1	552	O	*Glycine*[e]	FC:PI
2025a	*Teline pallida* (Poir.) G.Kunkel subsp. *pallida*	–[m]	Fabaceae[j]	E	48	4	P	1,115	1·1	2·3	4·6	552	O	*Glycine*[e]	FC:PI
2026a	*Teline stenopetala* (Webb & Berthel.) Webb & Berthel. subsp. *tenopetala*	–[m]	Fabaceae[j]	E	48[o]	4	P	998	1·0	2·0	4·1	552	O	*Glycine*[e]	FC:PI
2027a	*Tetracme pamirica* Vass.	Yes	Brassicaceae[j]	E	28[o]	–[p]	–[q]	1,653	1·7	3·4	6·8	599	O	L	FC:PI
2028a	*Teucrium heterophyllum* L'Hér. subsp. *brevipilosum* M.von Gaisberg	–[m]	Lamiaceae[j]	E	–[n]	–[p]	P	1,120	1·1	2·3	4·6	552	O	*Solan.*[e]	FC:PI
2029b	*Teucrium scorodonia* L.	Yes	Lamiaceae[j]	E	–[n]	–[p]	P	1,399	1·4	2·9	5·7	492	O	*Raphanus*[e]	FC:PI
2030a	*Thellungiella* sp.[l]	Yes	Brassicaceae[j]	E	14	2	–[q]	313	0·3	0·6	1·3	599	O	L	FC:PI
2031c	*Thespesia populnea* (L.) Sol. ex Correa	No	Malvaceae	E	26[o]	2	P	3,249	3·3	6·6	13·3	501[ag]	O	B[c]	Fe

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
2032a	*Thlaspi arvense* L.	Yes	Brassicaceae[j]	E	14	2	–[q]	509	0·5	1·0	2·1	599	O	L	FC:PI
2032b	*Thlaspi arvense* L.	Yes	Brassicaceae[j]	E	14[o]	2	B	533	0·5	1·1	2·2	540	O	*Raphanus*[e]	FC:PI
2032c	*Thlaspi arvense* L.	–[m]	Brassicaceae[j]	E	14	–[p]	–[q]	536	0·5	1·1	2·2	509	O	–[w]	FC:PI
2033a	*Thlaspi caerulescens* J.Presl & C.Presl[i]	Yes	Brassicaceae[j]	E	14	2	B	328	0·3	0·7	1·3	540	O	*Raphanus*[e]	FC:PI
2033b	*Thlaspi caerulescens* J.Presl & C.Presl[i]	Yes	Brassicaceae[j]	E	14[o]	2	B	342	0·4	0·7	1·4	522	O	*Raphanus*[e]	FC:PI
2034a	*Thlaspi ceratocarpum* (Pall.) Murray	Yes	Brassicaceae[j]	E	14	2	–[q]	421	0·4	0·9	1·7	599	O	L	FC:PI
2035a	*Thlaspi goesingense* Halácsy	Yes	Brassicaceae[j]	E	56[o]	8	B	978	1·0	2·0	4·0	522	O	*Raphanus*[e]	FC:PI
2036a	*Thlaspi montanum* var. *fendleri*[l]	Yes	Brassicaceae[j]	E	14[o]	2	B	284	0·3	0·6	1·2	540	O	*Raphanus*[e]	FC:PI
2036b	*Thlaspi montanum* var. *siskiyouense*[l]	Yes	Brassicaceae[j]	E	14	2	B	303	0·3	0·6	1·2	540	O	*Raphanus*[e]	FC:PI
2036c	*Thlaspi montanum* var. *montanum*[i, l]	Yes	Brassicaceae[j]	E	14	2	B	308	0·3	0·6	1·3	540	O	*Raphanus*[e]	FC:PI
2037a	*Thlaspi oxyceras* (Boiss.) Hedge[i]	Yes	Brassicaceae[j]	E	–[n]	–[p]	AB	328	0·3	0·7	1·3	522	O	*Raphanus*[e]	FC:PI
2038a	*Thlaspi perfoliatum* L.	Yes	Brassicaceae[j]	E	14	2	B	303	0·3	0·6	1·2	540	O	*Raphanus*[e]	FC:PI
2039a	*Thlaspi rosulare* Boiss. & Bal.[i]	Yes	Brassicaceae[j]	E	–[n]	–[p]	B	313	0·3	0·6	1·3	522	O	*Raphanus*[e]	FC:PI
2040a	*Thlaspi tymphaeum* Hausskn.	Yes	Brassicaceae[j]	E	14	2	B	308	0·3	0·6	1·3	540	O	*Raphanus*[e]	FC:PI
2041a	*Thlaspi tymphaeum* Hausskn.	Yes	Brassicaceae[j]	E	28	4	B	641	0·7	1·3	2·6	540	O	*Raphanus*[e]	FC:PI
2042a	*Thlaspi violascens* Boiss.	Yes	Brassicaceae[j]	E	–[n]	–[p]	A	303	0·3	0·6	1·2	522	O	*Raphanus*[e]	FC:PI
2043a	*Thryallis angustifolia* (Benth.) Kuntze	No	Malpighiaceae	E	–[n]	–[p]	P	3,800	3·9	7·8	15·5	501[ag]	O	B[c]	Fe
2044a	*Thryptomene saxicola* cv. Payne[l]	–[m]	Myrtaceae	E	–[n]	–[p]	–[q]	401	0·4	0·8	1·6	526	O	A	FC:PI
2045a	*Thyridolepis mitchelliana* (Nees) S.T.Blake	–[m]	Poaceae[j]	M	–[n]	–[p]	BP	689	0·7	1·4	2·8	526	O	A	FC:PI
2046a	*Tinguarra cervariaefolia* (DC.) Parl.	–[m]	Apiaceae[j]	E	22[o]	2	P	1,183	1·2	2·4	4·8	552	O	*Solan.*[e]	FC:PI
2047a	*Tinguarra montana* (Webb ex Christ) A.Hans. & Kunk.	–[m]	Apiaceae[j]	E	22[o]	2	P	1,198	1·2	2·5	4·9	477	O	*Solan.*[e]	FC:PI
2048a	*Todaroa aurea* Parl.	–[m]	Apiaceae[j]	E	22[o]	2	P	1,403	1·4	2·9	5·7	477	O	*Solan.*[e]	FC:PI
2049a	*Tolpis crassiuscula* Svent.[i]	–[m]	Asteraceae[j]	E	18[o]	2	P	1,350	1·4	2·8	5·5	552	O	*Solan.*[e]	FC:PI
2050a	*Tolpis laciniata* (Sch. Bip. ex Webb & Berth.) Webb	–[m]	Asteraceae[j]	E	18[o]	2	P	1,301	1·3	2·7	5·3	477	O	*Solan.*[e]	FC:PI
2051a	*Tolpis lagopoda* C.Sm. in Buch	–[m]	Asteraceae[j]	E	18[o]	2	P	1,389	1·4	2·8	5·7	552	O	*Solan.*[e]	FC:PI
2052a	*Tolpis webbii* Sch. Bip. ex Webb & Berth.	–[m]	Asteraceae[j]	E	18	2	P	1,345	1·4	2·8	5·5	477	O	*Solan.*[e]	FC:PI
2053a	*Torenia baillonii* Godefr	No	Linderniaceae[k]	E	16	2	AP	166	0·2	0·3	0·7	596	O	*Lotus*[e]	FC:PI

2054a	*Torenia fournieri* Linden cv. Common violet	No	Linderniaceae[k]	E	18	2	AP	171	0·2	0·4	0·7	596	O	*Lotus*[e]	FC:PI
2055a	*Tragopogon dubius* Scopoli[i]	Yes	Asteraceae[j]	E	12	2	AB	2,875	2·9	5·9	11·8	510	O	G	Fe
2056a	*Tragopogon mirus* Ownbey[i]	Yes	Asteraceae[j]	E	24	4	AB	5,110	5·2	10·5	20·9	510	O	G	Fe
2056b	*Tragopogon mirus* Ownbey[i]	Yes	Asteraceae[j]	E	24	4	AB	6,269	6·4	12·8	25·6	510	O	G	Fe
2057a	*Tragopogon miscellus* Ownbey[i]	Yes	Asteraceae[j]	E	24	4	AB	5,320	5·4	10·9	21·8	510	O	G	Fe
2058a	*Tragopogon porrifolius* L.[i]	Yes	Asteraceae[j]	E	12	2	AB	3,220	3·3	6·6	13·2	510	O	G	Fe
2059a	*Tragopogon pratensis* L.[i]	Yes	Asteraceae[j]	E	12	2	AB	2,709	2·8	5·5	11·1	510	O	G	Fe
2059b	*Tragopogon pratensis* L.[i]	Yes	Asteraceae[j]	E	12	2	AB	3,042	3·1	6·2	12·4	510	O	G	Fe
2060a	*Trichocentrum ascendens* (Lindl.) M.W.Chase & N.H.Williams	Yes	Orchidaceae	M	–[n]	–[p]	P	1,663	1·7	3·4	6·8	504[ah]	O	–[w]	FC:DAPI
2061b	*Trichocentrum panamense* Rolfe	Yes	Orchidaceae	M	–[n]	–[p]	P	4,205	4·3	8·6	17·2	504[ah]	O	–[w]	FC:DAPI
2062b	*Trichopilia marginata* Henfrey	Yes	Orchidaceae	M	–[n]	–[p]	P	2,738	2·8	5·6	11·2	504[ah]	O	–[w]	FC:DAPI
2063a	*Trifolium africanum* Ser.	No	Fabaceae[j]	E	32	4	–[q]	2,245	2·3	4·6	9·2	534	O	*Trifolium*[e]	FC:PI
2064a	*Trifolium alexandrinum* L.	No	Fabaceae[j]	E	16	2	–[q]	542	0·6	1·1	2·2	534	O	*Trifolium*[e]	FC:PI
2065a	*Trifolium ambiguum* M.B.	No	Fabaceae[j]	E	48	6	–[q]	2,242	2·3	4·6	9·2	534	O	*Trifolium*[e]	FC:PI
2066a	*Trifolium arvense* L.	No	Fabaceae[j]	E	14	2	–[q]	377	0·4	0·8	1·5	534	O	*Trifolium*[e]	FC:PI
2067a	*Trifolium aureum* Poll.	No	Fabaceae[j]	E	16	2	–[q]	370	0·4	0·8	1·5	534	O	*Trifolium*[e]	FC:PI
2068a	*Trifolium burchellianum* Ser.	No	Fabaceae[j]	E	48	6	–[q]	3,606	3·7	7·4	14·7	534	O	*Trifolium*[e]	FC:PI
2069a	*Trifolium campestre* Schreb.	No	Fabaceae[j]	E	14	2	–[q]	363	0·4	0·7	1·5	534	O	*Trifolium*[e]	FC:PI
2070a	*Trifolium dubium* Sibth.	No	Fabaceae[j]	E	28	4	–[q]	714	0·7	1·5	2·9	534	O	*Trifolium*[e]	FC:PI
2071a	*Trifolium fragiferum* L.	No	Fabaceae[j]	E	16	2	–[q]	525	0·5	1·1	2·1	534	O	*Trifolium*[e]	FC:PI
2072a	*Trifolium glomeratum* L.	No	Fabaceae[j]	E	16	2	–[q]	383	0·4	0·8	1·6	534	O	*Trifolium*[e]	FC:PI
2073a	*Trifolium hirtum* All.	No	Fabaceae[j]	E	10	2	–[q]	669	0·7	1·4	2·7	534	O	*Trifolium*[e]	FC:PI
2074a	*Trifolium hybridum* L.	No	Fabaceae[j]	E	16	2	–[q]	608	0·6	1·2	2·5	534	O	*Trifolium*[e]	FC:PI
2075a	*Trifolium incarnatum* L.	No	Fabaceae[j]	E	14	2	–[q]	652	0·7	1·3	2·7	534	O	*Trifolium*[e]	FC:PI
2076a	*Trifolium lappaceum* L.	No	Fabaceae[j]	E	16	2	–[q]	342	0·4	0·7	1·4	534	O	*Trifolium*[e]	FC:PI
2077a	*Trifolium ligusticum* Balb. ex Loisel.	No	Fabaceae[j]	E	12	2	–[q]	336	0·3	0·7	1·4	534	O	*Trifolium*[e]	FC:PI
2078a	*Trifolium medium* L.	No	Fabaceae[j]	E	80	10	–[q]	3,154	3·2	6·5	12·9	534	O	*Trifolium*[e]	FC:PI
2079a	*Trifolium michelianum* Savi	No	Fabaceae[j]	E	16	2	–[q]	640	0·7	1·3	2·6	534	O	*Trifolium*[e]	FC:PI
2080a	*Trifolium nigrescens* Viv.	No	Fabaceae[j]	E	16	2	–[q]	385	0·4	0·8	1·6	534	O	*Trifolium*[e]	FC:PI
2081a	*Trifolium polymorphum* Poir.	No	Fabaceae[j]	E	16	2	–[q]	1,002	1·0	2·1	4·1	534	O	*Trifolium*[e]	FC:PI
2082a	*Trifolium pratense* L.	No	Fabaceae[j]	E	14	2	–[q]	418	0·4	0·9	1·7	534	O	*Trifolium*[e]	FC:PI
2082b	*Trifolium pratense* L.	Yes	Fabaceae[j]	E	–[n]	–[p]	P	518	0·5	1·1	2·1	492	O	*Glycine*[e]	FC:PI
2083a	*Trifolium repens* L.	No	Fabaceae[j]	E	32	4	A	1,093	1·1	2·2	4·5	534	O	*Trifolium*[e]	FC:PI
2084a	*Trifolium resupinatum* L.	No	Fabaceae[j]	E	16	2	–[q]	508	0·5	1·0	2·1	534	O	*Trifolium*[e]	FC:PI
2085a	*Trifolium rueppellianum* Fresen.	No	Fabaceae[j]	E	16	2	–[q]	1,484	1·5	3·0	6·1	534	O	*Trifolium*[e]	FC:PI
2086a	*Trifolium semipilosum* Fresen.	No	Fabaceae[j]	E	16	2	–[q]	1,917	2·0	3·9	7·8	534	O	*Trifolium*[e]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
2087a	*Trifolium striatum* L.	No	Fabaceae[j]	E	14	2	–[q]	372	0·4	0·8	1·5	534	O	*Trifolium*[e]	FC:PI
2088a	*Trifolium subterraneum* L.	No	Fabaceae[j]	E	16	2	–[q]	543	0·6	1·1	2·2	534	O	*Trifolium*[e]	FC:PI
2089b	*Trifolium tembense* Fresen.	No	Fabaceae[j]	E	16	2	–[q]	819	0·8	1·7	3·3	534	O	*Trifolium*[e]	FC:PI
2090a	*Trifolium tomentosum* L.	No	Fabaceae[j]	E	16	2	–[q]	508	0·5	1·0	2·1	534	O	*Trifolium*[e]	FC:PI
2091a	*Trifolium variegatum* Nutt.	No	Fabaceae[j]	E	16	2	–[q]	351	0·4	0·7	1·4	534	O	*Trifolium*[e]	FC:PI
2092a	*Trifolium vesiculosum* Savi	No	Fabaceae[j]	E	16	2	–[q]	663	0·7	1·4	2·7	534	O	*Trifolium*[e]	FC:PI
2093a	*Trifolium willdenovii* Spreng.	No	Fabaceae[j]	E	16	2	–[q]	433	0·4	0·9	1·8	534	O	*Trifolium*[e]	FC:PI
2094b	*Trillium camschatcense* Ker Gawl.	No	Melanthiaceae	M	–[n]	–[p]	P	43,321	44·3	88·6	177·2	518	O	B[c]	FC:PI
2095a	*Trillium* × *hagae* Miyabe & Tatew.	No	Melanthiaceae	M	30[o]	6	P	129,536	132·5	264·9	529·8	616	O	*Haem.*[e]	FC:PI
2096a	*Tripleurospermum callosum* (Boiss. & Heldr.) E.Hossain[h]	Yes	Asteraceae[j]	E	36[o]	4	P	3,902	4·0	8·0	16·0	525	O	*Petunia*[e]	FC:PI
2096b	*Tripleurospermum callosum* (Boiss. & Heldr.) E.Hossain[h]	Yes	Asteraceae[j]	E	36	4	P	4,000	4·1	8·2	16·4	525	O	*Petunia*[e]	FC:PI
2097a	*Tripleurospermum elongatum* (Fischer & C.Mayer ex DC.) Bornm.	Yes	Asteraceae[j]	E	18[o]	2	BP	2,381	2·4	4·9	9·7	525	O	*Petunia*[e]	FC:PI
2098a	*Tripleurospermum maritimum* (L.) K.Koch	Yes	Asteraceae[j]	E	36	4	AB	4,509	4·6	9·2	18·4	525	O	*Petunia*[e]	FC:PI
2098b	*Tripleurospermum maritimum* (L.) K.Koch	Yes	Asteraceae[j]	E	18	2	AB	2,690	2·8	5·5	11·0	525	O	*Petunia*[e]	FC:PI
2099a	*Tripleurospermum melanolepis* (Boiss.) Rech. f.	Yes	Asteraceae[j]	E	18[o]	2	P	2,386	2·4	4·9	9·8	525	O	*Petunia*[e]	FC:PI
2100a	*Tripleurospermum oreades* var. *oreades* (Boiss.) Rech. f.[h]	Yes	Asteraceae[j]	E	36	4	P	4,284	4·4	8·8	17·5	525	O	*Petunia*[e]	FC:PI
2100b	*Tripleurospermum oreades* (Boiss.) Rech. f. var. *tchihatchewii* E.Hossain	Yes	Asteraceae[j]	E	36[o]	4	P	4,357	4·5	8·9	17·8	525	O	*Petunia*[e]	FC:PI
2100c	*Tripleurospermum oreades* (Boiss.) Rech. f. var. *oreades*[h]	Yes	Asteraceae[j]	E	36	4	P	4,425	4·5	9·1	18·1	525	O	*Petunia*[e]	FC:PI
2101a	*Tripleurospermum repens* (Freyn & Sint.) Bornm.[h]	Yes	Asteraceae[j]	E	36	4	P	4,068	4·2	8·3	16·6	525	O	*Petunia*[e]	FC:PI

2101b	*Tripleurospermum repens* (Freyn & Sint.) Bornm.[h]	Yes	Asteraceae[j]	E	36[o]	4	P	4,176	4·3	8·5	17·1	525	O	*Petunia*[e]	FC:PI
2102a	*Tripleurospermum sevanense* (Manden.) Pobed.[h]	Yes	Asteraceae[j]	E	36	4	P	4,039	4·1	8·3	16·5	525	O	*Petunia*[e]	FC:PI
2102b	*Tripleurospermum sevanense* (Manden.) Pobed.[h]	Yes	Asteraceae[j]	E	36	4	P	4,078	4·2	8·3	16·7	525	O	*Petunia*[e]	FC:PI
2103a	*Trisetum* aff. *lepidum*[l]	Yes	Poaceae[j]	M	28	4	P	8,323	8·5	17·0	34·0	528	O	–[w]	FC:PI
2104a	*Trisetum antarcticum* (G.Frost) Trin.	Yes	Poaceae[j]	M	28	4	P	3,521	3·6	7·2	14·4	476	O	*Actinidia*[e]	FC:PI
2105a	*Trisetum arduanum* Edgar & A.P.Druce	Yes	Poaceae[j]	M	28	4	P	5,413	5·5	11·1	22·1	528	O	–[w]	FC:PI
2105b	*Trisetum arduanum* Edgar & A.P.Druce	Yes	Poaceae[j]	M	28	4	P	3,472	3·6	7·1	14·2	476	O	*Actinidia*[e]	FC:PI
2106a	*Trisetum drucei* Edgar	Yes	Poaceae[j]	M	28	4	P	5,560	5·7	11·4	22·7	528	O	–[w]	FC:PI
2106b	*Trisetum drucei* Edgar	Yes	Poaceae[j]	M	28	4	P	3,912	4·0	8·0	16·0	476	O	*Actinidia*[e]	FC:PI
2107a	*Trisetum lepidum* Edgar & A.P.Druce	Yes	Poaceae[j]	M	28	4	P	8,166	8·4	16·7	33·4	528	O	–[w]	FC:PI
2108a	*Trisetum serpentinum* Edgar & A.P.Druce	Yes	Poaceae[j]	M	28	4	P	5,286	5·4	10·8	21·6	528	O	–[w]	FC:PI
2108b	*Trisetum serpentinum* Edgar & A.P.Druce	Yes	Poaceae[j]	M	28	4	P	3,521	3·6	7·2	14·4	476	O	*Actinidia*[e]	FC:PI
2109a	*Trisetum spicatum* (L.) K.Richt.	Yes	Poaceae[j]	M	28	4	P	4,802	4·9	9·8	19·6	528	O	–[w]	FC:PI
2110a	*Trisetum tenellum* (Petrie) A.W.Hill	Yes	Poaceae[j]	M	28	4	P	5,032	5·1	10·3	20·6	528	O	–[w]	FC:PI
2111a	*Trisetum youngii* Hook.f.	Yes	Poaceae[j]	M	28	4	P	4,954	5·1	10·1	20·3	528	O	–[w]	FC:PI
2112d	*Triticale* (hexaploid) line TPG 17-79[l]	No	Poaceae[j]	M	–[n]	6	A	15,575	15·9	31·9	63·7	610	C	A[c]	Fe
2112e	*Triticale* (hexaploid) line TPG 17/3-79[l]	No	Poaceae[j]	M	–[n]	6	A	15,853	16·2	32·4	64·8	610	C	A[c]	Fe
2113b	*Triticale* (octoploid) line TPO 1/4-80[l]	No	Poaceae[j]	M	–[n]	8	A	22,680	23·2	46·4	92·8	610	C	A[c]	Fe
2114r	*Triticum aestivum* L.	Yes	Poaceae[j]	M	–[n]	–[p]	A	16,049	16·4	32·8	65·6	492	O	C[c]	FC:PI
2114s	*Triticum aestivum* L subsp. *aestivum*.	No[m1]	Poaceae[j]	M	42	6	A	17,281	17·7	35·3	70·7	604	O	F[c]	FC:PI
2114t	*Triticum aestivum* L. subsp. *compactum* (Host) Mackey	No[m1]	Poaceae[j]	M	42	6	A	17,389	17·8	35·6	71·1	604	O	F[c]	FC:PI
2114u	*Triticum aestivum* L. subsp. *sphaerococcum* (Percival) Mackey	No[m1]	Poaceae[j]	M	42	6	A	17,594	18·0	36·0	72·0	604	O	F[c]	FC:PI
2114v	*Triticum aestivum* L. subsp. *spelta* (L.) Thell.	No[m1]	Poaceae[j]	M	42	6	A	17,330	17·7	35·4	70·9	604	O	F[c]	FC:PI
2114w	*Triticum aestivum* L. subsp. *tibetanum* Shao	No[m1]	Poaceae[j]	M	42	6	A	18,504	18·9	37·8	75·7	604	O	F[c]	FC:PI
2115a	*Triticum durum* Desf. cv. Kharkovskaya I	No	Poaceae[j]	M	28[o]	4	A	12,377	12·7	25·3	50·6	610	C	A[c]	Fe
2116f	*Triticum monococcum* L. subsp. *aegilopoides*	No[m1]	Poaceae[j]	M	14	2	A	6,308	6·5	12·9	25·8	605	O	F-2118p	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
2116g	*Triticum monococcum* L. subsp. *monococcum*	No[m1]	Poaceae[j]	M	14	2	A	6,337	6·5	13·0	25·9	605	O	F-2118p	FC:PI
2117c	*Triticum timopheevii* (Zhuk.) Zhuk. subsp. *armeniacum* (Jakubz) van Slageren	No[m1]	Poaceae[j]	M	28	4	A	11,560	11·8	23·6	47·3	604	O	F[c]	FC:PI
2117d	*Triticum timopheevii* (Zhuk.) Zhuk. subsp. *timopheevii*	No[m1]	Poaceae[j]	M	28	4	A	11,609	11·9	23·7	47·5	604	O	F[c]	FC:PI
2118g	*Triticum turgidum* L. subsp. *carthlicum*	No	Poaceae[j]	M	28	4	A	11,560	11·8	23·6	47·3	519	O	–[w]	FC:PI
2118h	*Triticum turgidum* L. subsp. *carthlicum* (Nevski) A.Lðve & D.Lðve	No[m1]	Poaceae[j]	M	28	4	A	12,587	12·9	25·7	51·5	604	O	F[c]	FC:PI
2118i	*Triticum turgidum* L. subsp. *dicoccoides* (Kðrn. Ex Asch. & Graebn.) Thell.	No[m1]	Poaceae[j]	M	28	4	A	12,626	12·9	25·8	51·6	604	O	F[c]	FC:PI
2118j	*Triticum turgidum* L. subsp. *dicoccoides*	No	Poaceae[j]	M	28	4	A	11,721	12·0	24·0	47·9	519	O	–[w]	FC:PI
2118k	*Triticum turgidum* L. subsp. *dicoccon* (Schrank) Thell.	No[m1]	Poaceae[j]	M	28	4	A	12,587	12·9	25·7	51·5	604	O	F[c]	FC:PI
2118l	*Triticum turgidum* L. subsp. *durum*	No	Poaceae[j]	M	28	4	A	11,692	12·0	23·9	47·8	519	O	–[w]	FC:PI
2118m	*Triticum turgidum* L. subsp. *durum* (Desf.) Husn.	No[m1]	Poaceae[j]	M	28	4	A	12,558	12·8	25·7	51·4	604	O	F[c]	FC:PI
2118n	*Triticum turgidum* L. subsp. *polonicum* (L.) Thell.	No[m1]	Poaceae[j]	M	28	4	A	12,245	12·5	25·0	50·1	604	O	F[c]	FC:PI
2118o	*Triticum turgidum* L. subsp. *turgidum*	No[m1]	Poaceae[j]	M	28	4	A	12,470	12·8	25·5	51·0	604	O	F[c]	FC:PI
2118p	*Triticum turgidum* L. subsp. *durum* cv. Inbar	No	Poaceae[j]	M	28	4	A	12,421	12·7	25·4	50·8	605	O	F[c]	FC:PI
2119c	*Triticum urartu* Thumanjan ex Gandilyan	No	Poaceae[j]	M	14	2	A	5,751	5·9	11·8	23·5	519	O	–[w]	FC:PI
2119d	*Triticum urartu* Tumanian ex Gandilyan	No[m1]	Poaceae[j]	M	14	2	A	5,888	6·0	12·0	24·1	605	O	F-2118p	FC:PI
2120a	*Triticum zhukovskyi* Menabde & Ericz.	No[m1]	Poaceae[j]	M	42	6	A	17,350	17·7	35·5	71·0	604	O	F[c]	FC:PI
2121a	*Tulipa aitchisonii* Hall var. *clusianoides*	Yes	Liliaceae	M	36	3	P	–[t]	–[t]	43·3	86·6	565	O	B	FC:PI
2122a	*Tulipa linifolia* Regel	Yes	Liliaceae	M	24	2	P	14,059	14·4	28·8	57·5	565	O	B	FC:PI
2123a	*Tulipa montana* Lindl.	Yes	Liliaceae	M	24	2	P	14,792	15·1	30·3	60·5	565	O	B	FC:PI

2124a	*Turritis glabra* (L.) Bernh.	Yes	Brassicaceae[j]	E	12	2	–[q]	235	0·2	0·5	1·0	599	O	L	FC:PI
2125b	*Ulmus glabra* Hudson	No	Ulmaceae	E	–[n]	–[p]	P	2,137	2·2	4·4	8·7	585	O	H[c]	FC:PI
2126a	*Ulmus minor* Mill.	No	Ulmaceae	E	–[n]	–[p]	P	2,078	2·1	4·3	8·5	585	O	H[c]	FC:PI
2127b	*Urtica dioica* L.	Yes	Urticaceae	E	–[n]	–[p]	P	1,144	1·2	2·3	4·7	492	O	G[c]	FC:PI
2128b	*Urtica urens* L.	No	Urticaceae	E	–[n]	–[p]	A	523	0·5	1·1	2·1	492	O	*Glycine*[e]	FC:PI
2129a	*Utricularia australis* R.Br.	Yes	Lentibulariaceae	E	–[n]	–[p]	P	175	0·2	0·4	0·7	535	O	G[c]	CIA
2130a	*Utricularia blanchetii* A.DC.	Yes	Lentibulariaceae	E	–[n]	–[p]	P	135	0·1	0·3	0·6	535	O	G[c]	CIA
2131a	*Utricularia gibba* L.	Yes	Lentibulariaceae	E	–[n]	–[p]	P	88	0·1	0·2	0·4	535	O	G[c]	CIA
2132a	*Utricularia humboldtii* R.H.Schomb.	Yes	Lentibulariaceae	E	–[n]	–[p]	P	232	0·2	0·5	0·9	535	O	G[c]	CIA
2133a	*Utricularia livida* E.Mey.	Yes	Lentibulariaceae	E	–[n]	–[p]	P	252	0·3	0·5	1·0	535	O	G[c]	CIA
2134a	*Utricularia microcalyx* (P.Taylor) P.Taylor	Yes	Lentibulariaceae	E	–[n]	–[p]	P	214	0·2	0·4	0·9	535	O	G[c]	CIA
2135a	*Utricularia parthenopipes* P.Taylor	Yes	Lentibulariaceae	E	–[n]	–[p]	P	140	0·1	0·3	0·6	535	O	G[c]	CIA
2136a	*Utricularia praelonga* A.St.-Hil. & F.Girard	Yes	Lentibulariaceae	E	–[n]	–[p]	P	158	0·2	0·3	0·6	535	O	G[c]	CIA
2137a	*Utricularia prehensilis* E.Mey.	Yes	Lentibulariaceae	E	–[n]	–[p]	P	401	0·4	0·8	1·6	535	O	G[c]	CIA
2138a	*Utricularia pubescens* Sm.	Yes	Lentibulariaceae	E	–[n]	–[p]	P	216	0·2	0·4	0·9	535	O	G[c]	CIA
2139a	*Utricularia quelchii* N.E.Br.	Yes	Lentibulariaceae	E	–[n]	–[p]	P	157	0·2	0·3	0·6	535	O	G[c]	CIA
2140a	*Utricularia reniformis* A.St.-Hil.	Yes	Lentibulariaceae	E	–[n]	–[p]	P	328	0·3	0·7	1·3	535	O	G[c]	CIA
2141a	*Utricularia sandersonii* Oliv.	Yes	Lentibulariaceae	E	–[n]	–[p]	P	235	0·2	0·5	1·0	535	O	G[c]	CIA
2142a	*Utricularia subulata* L.	Yes	Lentibulariaceae	E	–[n]	–[p]	P	247	0·3	0·5	1·0	535	O	G[c]	CIA
2143a	*Vella pseudocytisus* L.	No	Brassicaceae[j]	E	68	4	P	1,856	1·9	3·8	7·6	602	O	*Solan.*[e]	FC:PI
2144a	*Vella spinosa* Boiss.	Yes	Brassicaceae[j]	E	34	–[p]	–[q]	831	0·9	1·7	3·4	599	O	L	FC:PI
2145a	*Verbena rigida* Spreng.	Yes	Verbenaceae	E	42	–[p]	A	1,161	1·2	2·4	4·8	612	O	K	FC:PI
2146a	*Veronica agrestis* L.	Yes	Plantaginaceae	E	28[o]	4	A	714	0·7	1·5	2·9	478	O	*Glycine*[e]	CIA
2147a	*Veronica anagallis-aquatica* L.	Yes	Plantaginaceae	E	36[o]	4	P	1,056	1·1	2·2	4·3	478	O	*Glycine*[e]	CIA
2148a	*Veronica armena* Boiss. & Huet	Yes	Plantaginaceae	E	16	2	P	372	0·4	0·8	1·5	478	O	*Glycine*[e]	CIA
2149a	*Veronica arvensis* L.	Yes	Plantaginaceae	E	18[o]	2	A	323	0·3	0·7	1·3	478	O	*Glycine*[e]	CIA
2150a	*Veronica baumgartenii* Roem. & Schult.	Yes	Plantaginaceae	E	14[o]	2	P	489	0·5	1·0	2·0	478	O	*Glycine*[e]	CIA
2151a	*Veronica bellidioides* L.	Yes	Plantaginaceae	E	36[o]	4	P	1,017	1·0	2·1	4·2	478	O	*Glycine*[e]	CIA
2152a	*Veronica chamaedrys* L.	Yes	Plantaginaceae	E	32[o]	4	P	1,457	1·5	3·0	6·0	478	O	*Glycine*[e]	CIA
2153a	*Veronica ciliata* Fisch.	Yes	Plantaginaceae	E	16[o]	2	P	1,281	1·3	2·6	5·2	478	O	*Glycine*[e]	CIA
2154a	*Veronica cinerea* Boiss. & Balansa	Yes	Plantaginaceae	E	16[o]	2	P	313	0·3	0·6	1·3	478	O	*Glycine*[e]	CIA
2155a	*Veronica copelandii* Eastw.	Yes	Plantaginaceae	E	18[o]	2	P	812	0·8	1·7	3·3	478	O	*Glycine*[e]	CIA
2156a	*Veronica crista-galli* Steven	Yes	Plantaginaceae	E	18	2	A	675	0·7	1·4	2·8	478	O	*Glycine*[e]	CIA
2157a	*Veronica cymbalaria* Bodard	Yes	Plantaginaceae	E	36[o]	4	A	812	0·8	1·7	3·3	478	O	*Glycine*[e]	CIA
2158a	*Veronica donii* Rapp	Yes	Plantaginaceae	E	18[o]	2	A	734	0·8	1·5	3·0	478	O	*Glycine*[e]	CIA
2159a	*Veronica filiformis* Sm.	Yes	Plantaginaceae	E	14[o]	2	P	352	0·4	0·7	1·4	478	O	*Glycine*[e]	CIA
2160a	*Veronica gentianoides* L.	Yes	Plantaginaceae	E	48[o]	6	P	1,819	1·9	3·7	7·4	478	O	*Glycine*[e]	CIA

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount 1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)	Original ref.[a]	Present amount†	Standard species*[b1]	Method††
2161a	*Veronica glauca* Sibth. & Sm.	Yes	Plantaginaceae	E	18[o]	2	A	391	0·4	0·8	1·6	478	O	*Glycine*[e]	CIA
2162a	*Veronica hederifolia* L.	Yes	Plantaginaceae	E	54[o]	6	A	1,379	1·4	2·8	5·6	478	O	*Glycine*[e]	CIA
2163a	*Veronica jacquinii* Baumg.	Yes	Plantaginaceae	E	48[o]	6	P	1,663	1·7	3·4	6·8	478	O	*Glycine*[e]	CIA
2164a	*Veronica kellererii* Degen & Urum.	Yes	Plantaginaceae	E	16[o]	2	P	910	0·9	1·9	3·7	478	O	*Glycine*[e]	CIA
2165a	*Veronica lycica* E.B.J.Lehm.	Yes	Plantaginaceae	E	18[o]	2	A	430	0·4	0·9	1·8	478	O	*Glycine*[e]	CIA
2166a	*Veronica missurica* Raf.	Yes	Plantaginaceae	E	24[o]	4	P	1,291	1·3	2·6	5·3	478	O	*Petroselinum*[e]	FC:PI
2167a	*Veronica multifida* L.	Yes	Plantaginaceae	E	48[o]	6	P	1,721	1·8	3·5	7·0	478	O	*Glycine*[e]	CIA
2168a	*Veronica nakaiana* Ohwi[ad]	Yes	Plantaginaceae	E	34[o]	4	P	606	0·6	1·2	2·5	478[ad]	O	*Glycine*[e]	CIA
2169a	*Veronica orchidea* Crantz	Yes	Plantaginaceae	E	34[o]	4	P	782	0·8	1·6	3·2	478	O	*Glycine*[e]	CIA
2170a	*Veronica peregrina* L.	Yes	Plantaginaceae	E	52[o]	6	A	929	1·0	1·9	3·8	478	O	*Glycine*[e]	CIA
2171a	*Veronica perfoliata* R.Br.	Yes	Plantaginaceae	E	40[o]	4	P	1,516	1·6	3·1	6·2	478	O	*Petroselinum*[e]	FC:PI
2172a	*Veronica polita* Fr.	Yes	Plantaginaceae	E	14[o]	2	A	411	0·4	0·8	1·7	478	O	*Glycine*[e]	CIA
2173a	*Veronica serpyllifolia* L.	Yes	Plantaginaceae	E	14[o]	2	P	430	0·4	0·9	1·8	478	O	*Glycine*[e]	CIA
2174a	*Veronica syriaca* Roem. & Schult.	Yes	Plantaginaceae	E	14[o]	2	A	685	0·7	1·4	2·8	478	O	*Glycine*[e]	CIA
2175a	*Veronica teucrium* L.	Yes	Plantaginaceae	E	64[o]	8	P	2,210	2·3	4·5	9·0	478	O	*Glycine*[e]	CIA
2176a	*Veronica triloba* Opiz	Yes	Plantaginaceae	E	18[o]	2	A	597	0·6	1·2	2·4	478	O	*Glycine*[e]	CIA
2177a	*Veronica triphyllos* L.	Yes	Plantaginaceae	E	14[o]	2	A	694	0·7	1·4	2·8	478	O	*Glycine*[e]	CIA
2178a	*Veronica urticifolia* Jacq.	Yes	Plantaginaceae	E	18[o]	2	P	626	0·6	1·3	2·6	478	O	*Glycine*[e]	CIA
2179a	*Veronica vendettadeae* Albach[ad]	Yes	Plantaginaceae	E	16[o]	2	P	626	0·6	1·3	2·6	478[ad]	O	*Glycine*[e]	CIA
2180a	*Veronica verna* L.	Yes	Plantaginaceae	E	16[o]	2	A	528	0·5	1·1	2·2	478	O	*Glycine*[e]	CIA
2181a	*Veronica vindobonensis* (M.A.Fisch.) M.A.Fisch.	Yes	Plantaginaceae	E	16[o]	2	P	880	0·9	1·8	3·6	478	O	*Glycine*[e]	CIA
2182a	*Veronicastrum virginicum* (L.) Farw.	Yes	Plantaginaceae	E	34[o]	4	P	1,281	1·3	2·6	5·2	478	O	*Glycine*[e]	CIA
2183a	*Vicia cirrhosa* C.Sm. ex Webb & Berthel.	–[m]	Fabaceae[j]	E	14[o]	2	A	2,822	2·9	5·8	11·5	552	O	G[c]	FC:PI
2184v	*Vicia faba* L.	Yes	Fabaceae[j]	E	–[n]	–[p]	A	12,817	13·1	26·2	52·4	492	O	G[c]	FC:PI
2185a	*Vicia scandens* R.P.Murray	–[m]	Fabaceae[j]	E	14[o]	2	P	2,841	2·9	5·8	11·6	552	O	G[c]	FC:PI
2186a	*Vieraea laevigata* (Brouss. ex Willd.) Webb	–[m]	Asteraceae[j]	E	16[o]	2	P	831	0·9	1·7	3·4	552	O	*Solan.*[e]	FC:PI
2187a	*Vinca difformis* Pourret[am]	Yes	Apocynaceae	E	46	–[p]	P	1,159	1·2	2·4	4·7	530[am]	O	G[c]	CIA
2188a	*Vinca herbacea* Waldst. & Kit.[am]	Yes	Apocynaceae	E	46	–[p]	P	880	0·9	1·8	3·6	530[am]	O	G[c]	CIA
2189b	*Vinca major* L.[i, am]	Yes	Apocynaceae	E	90	–[p]	P	1,819	1·9	3·7	7·4	530[am]	O	G[c]	CIA
2189c	*Vinca major* L.[i, am]	Yes	Apocynaceae	E	90	–[p]	P	2,000	2·0	4·1	8·2	530[am]	O	G[c]	CIA
2190a	*Vinca minor* L.[am]	Yes	Apocynaceae	E	46	–[p]	P	738	0·8	1·5	3·0	530[am]	O	G[c]	CIA
2191a	*Vinca rosea* L.[am]	Yes	Apocynaceae	E	16	–[p]	P	724	0·7	1·5	3·0	530[am]	O	G[c]	CIA
2192a	*Viola anagae* Gilli	–[m]	Violaceae	E	–[n]	–[p]	P	1,276	1·3	2·6	5·2	552	O	*Solan.*[e]	FC:PI
2193e	*Viscum album* L.	No	Loranthaceae	E	20[o]	2	P	100,636	102·9	205·8	411·6	616	O	*Haem.*[e]	FC:PI

2194a	*Viscum crassulae* Eckl. & Zeyh.	No	Loranthaceae	E	24[o]	2	P	80,196	82·0	164·0	328·0	616	O	*Haem.*[e]	FC:PI
2195b	*Viscum cruciatum* Sieber ex Spreng.	No	Loranthaceae	E	20[o]	2	P	85,966	87·9	175·8	351·6	616	O	*Haem.*[e]	FC:PI
2196a	*Viscum minimum* Harv.	No	Loranthaceae	E	28[o]	2	P	60,929	62·3	124·6	249·2	616	O	*Haem.*[e]	FC:PI
2197d	*Vitis vinifera* L.	No	Vitaceae	E	–[n]	–[p]	P	582	0·6	1·2	2·4	563	O	*Solan.*[e]	FC:PI
2197e	*Vitis vinifera* L. cv. Cabernet Sauvignon [i]	No	Vitaceae	E	38[o]	2	P	616	0·6	1·3	2·5	589	O	*Solan.*[e]	FC:PI
2198a	*Volutaria canariensis* Wagenitz	–[m]	Asteraceae[j]	E	32[o]	4	A	782	0·8	1·6	3·2	477	O	*Solan.*[e]	FC:PI
2199a	*Vulpia bromoides* (L.) S.F.Gray	–[m]	Poaceae[j]	M	14[o]	2	P	2,866	2·9	5·9	11·7	555	O	G[c]	FC:PI
2200a	*Vulpia ciliata* Dumort.	–[m]	Poaceae[j]	M	28[o]	4	P	4,053	4·1	8·3	16·6	555	O	G[c]	FC:PI
2201a	*Vulpia myuros* (L.) C.C.Gmel.[i]	–[m]	Poaceae[j]	M	42[o]	6	P	6,738	6·9	13·8	27·6	555	O	G[c]	FC:PI
2201a	*Vulpia sicula* (C.Presl) Link	–[m]	Poaceae[j]	M	14[o]	2	P	2,885	2·9	5·9	11·8	555	O	G[c]	FC:PI
2202a	*Wahlenbergia lobelioides* (L.f.) A.DC. subsp. *lobelioides*	–[m]	Campanulaceae	E	18[o]	2	A	323	0·3	0·7	1·3	552	O	*Raphanus*[e]	FC:PI
2203a	*Woodfordia fruticosa* (L.) Kurz	No	Lythraceae	E	16[o]	2	P	692	0·7	1·4	2·8	501[ag]	O	B[c]	Fe
2204a	*Wulfenia carinthiaca* Jacq.	Yes	Plantaginaceae	E	18[o]	2	P	1,320	1·4	2·7	5·4	478	O	*Glycine*[e]	CIA
2205a	*Xeranthemum annuum* L.	Yes	Asteraceae[j]	E	12	2	A	1,046	1·1	2·1	4·3	502	O	*Petunia*[e]	FC:PI
2206a	*Xeranthemum cylindraceum* Sibth. & Sm.	No	Asteraceae[j]	E	20	2	A	1,863	1·9	3·8	7·6	502	O	*Petunia*[e]	FC:PI
2207a	*Xeranthemum inapertum* (L.) Mill.	Yes	Asteraceae[j]	E	28	2	A	2,171	2·2	4·4	8·9	502	O	*Petunia*[e]	FC:PI
2208a	*Xeranthemum longepapposum* Fisch. & C.A.Mey.	Yes	Asteraceae[j]	E	14	2	A	2,866	2·9	5·9	11·7	502	O	*Petunia*[e]	FC:PI
2209a	*Xolantha guttata* (L.) Raf.	Yes	Cistaceae	E	36	6	A	3,570	3·7	7·3	14·6	567	O	*Solan.*[e]	FC:PI
2210a	*Xolantha guttata* (L.) Raf.	Yes	Cistaceae	E	48	8	A	4,401	4·5	9·0	18·0	567	O	*Solan.*[e]	FC:PI
2211a	*Xolantha tuberaria* (L.) Gallego, Muñoz Garm. & Navarro	Yes	Cistaceae	E	14	2	P	1,633	1·7	3·3	6·7	567	O	*Solan.*[e]	FC:PI
2212b	*Yucca glauca* Nuttall	No	Asparagaceae[k]	M	60[o]	–[p]	P	2,592	2·7	5·3	10·6	482	O	*Agave* sp.[e]	FC:PI
2213cb	*Zea mays* L.	Yes	Poaceae[j]	M	–[n]	–[p]	A	2,895	3·0	5·9	11·8	492	O	*Glycine*[e]	FC:PI
2214b	*Zingeria biebersteiniana* (Claus) P.A.Smirn.	Yes	Poaceae[j]	M	4	2	A	1,712	1·8	3·5	7·0	515	O	*Glycine*[e]	FC:PI
2214c	*Zingeria biebersteiniana* (Claus) P.A.Smirn.	No	Poaceae[j]	M	–[n]	–[p]	A	1,806	1·8	3·7	7·4	518	O	*Glycine*[e]	FC:PI
2215a	*Zingeria trichopoda* (Boiss.) P.A.Smirn.	Yes	Poaceae[j]	M	8	4	A	2,592	2·7	5·3	10·6	515	O	*Glycine*[e]	FC:PI
2216b	*Zostera marina* L.	Yes	Zosteraceae	M	12	2	P	597	0·6	1·2	2·4	479	O	G[c]	CIA
2217a	*Zostera noltii* Hornem	Yes	Zosteraceae	M	12	2	P	753	0·8	1·5	3·1	479	O	G[c]	CIA
2217b	*Zostera noltii* Hornem	Yes	Zosteraceae	M	12	2	P	460	0·5	0·9	1·9	479	O	*Trifolium*[e]	FC:PI
2218a	*Zotovia colensoi* (Hook.f.) Edgar & Connor	Yes	Poaceae[j]	M	48[o]	4	P	1,433	1·5	2·9	5·9	528	O	–[w]	FC:PI
2219a	*Zotovia thomsonii* (Petrie) Edgar & Connor	Yes	Poaceae[j]	M	c. 48[o]	4	P	1,340	1·4	2·7	5·5	528	O	–[w]	FC:PI

Continued

APPENDIX *(continued, the superscript letters refer to notes preceding this table)*

Entry number[g]	Species	Voucher	Family	Higher group[#]	2n[‡]	Ploidy level (x)	Life cycle type[§]	DNA amount				Original ref.[a]	Present amount†	Standard species*[b1]	Method††
								1C (Mbp[s])	1C (pg)	2C (pg)	4C (pg)				
2220a	*Zoysia minima* (Colenso) Zotov	Yes	Poaceae[j]	M	40	4	P	484	0·5	1·0	2·0	528	O	–[w]	FC:PI
2220b	*Zoysia minima* (Colenso) Zotov	Yes	Poaceae[j]	M	40	4	P	636	0·7	1·3	2·6	476	O	*Actinidia*[e]	FC:PI
2221a	*Zoysia pauciflora* Mez	Yes	Poaceae[j]	M	40	4	P	474	0·5	1·0	1·9	528	O	–[w]	FC:PI
2221b	*Zoysia pauciflora* Mez	Yes	Poaceae[j]	M	40	4	P	381	0·4	0·8	1·6	476	O	*Actinidia*[e]	FC:PI

‡ Chromosome number.
§ E, ephemeral; A, annual; B, biennial; P, perennial.
† O, original value; C, calibrated value; R recalibrated value.
* The standard species used to calibrate the present amount (see Table 5 and 7 for abbreviations used).
†† Fe, Feulgen microdensitometry; FC, flow cytometry using either propidium iodide (PI), ethidium bromide (EB) or 4', 6-diamidinophenylindole (DAPI) as the fluorochrome; GS, genome sequencing; CIA, computer image analysis.
# E, eudicot; M, monocot; BA, basal angiosperm.

Original References for DNA Values

Named references in the 'Notes to the Appendix' are given in the 'Literature cited'. Only numbered references of original sources of species' DNA values in the Appendix (column 13) are given in the Key below.

467 **Souza MM, Palomino G, Pereira TNS, Pereira MG, Viana AP. 2004.** Flow cytometric analysis of genome size variation in some *Passiflora* species. *Hereditas* **141**: 31–38.

468 **Fridlender A, Brown S, Verlaque R, Crosnier MT, Pech N. 2002.** Cytometric determination of genome size in *Colchicum* species (Liliales, Colchicaceae) of the western Mediterranean area. *Plant Cell Reports* **21**: 347–352.

469 **Walker DJ, Monino I, Gonzalez E, Frayssinet N, Correal E. 2005.** Determination of ploidy and nuclear DNA content in populations of *Atriplex halimus* (Chenopodiaceae). *Botanical Journal of the Linnean Society* **147**: 441–448.

470 **Turpeinen T, Kulmala J, Nevo E. 1999.** Genome size variation in *Hordeum spontaneum* populations. *Genome* **42**: 1094–1099.

471 **Hendrix B, Stewart JM. 2005.** Estimation of the nuclear DNA content of *Gossypium* species. *Annals of Botany* **95**: 789–797.

472 **Bureš P, Wang Y-F, Horová L, Suda J. 2004.** Genome size variation in Central European species of *Cirsium* (Compositae) and their natural hybrids. *Annals of Botany* **94**: 353–363.

473 **Zonneveld BJM, van Jaarsveld EJ. 2005.** Taxonomic implications of genome size for all species of the genus *Gasteria* Duval (Aloaceae). *Plant Systematics and Evolution* **251**: 217–227.

474 **Hörandl E, Greilhuber J. 2002.** Diploid and autotetraploid sexuals and their relationships to apomicts in the *Ranunculus cassubicus* group: insights from DNA content and isozyme variation. *Plant Systematics and Evolution* **234**: 85–100.

475 **Muratovic E, Bogunic F, Šoljan D, Siljak-Yakovlev S. 2005.** Does *Lilium bosniacum* merit species rank? A classical and molecular-cytogenetic analysis. *Plant Systematics and Evolution* **252**: 97–109.

476 **Murray BG, Weir IE, Ferguson AR, de Lange PJ. 2003.** Variation in DNA C-value and haploid genome size in New Zealand native grasses. *New Zealand Journal of Botany* **41**: 63–69.

477 **Suda J, Kyncl T, Freiová R. 2003.** Nuclear DNA amounts in Macaronesian angiosperms. *Annals of Botany* **92**: 153–164.

478 **Albach DC, Greilhuber J. 2004.** Genome size variation and evolution in *Veronica. Annals of Botany* **94**: 897–911.

479 **Dolenc Koce J, Vilhar B, Bohanec B, Dermastia M. 2003.** Genome size of Adriatic seagrasses. *Aquatic Botany* **77**: 17–25.

480 **Siljak-Yakovlev S, Peccenini S, Muratovic E, Zoldos V, Robin O, Valles J. 2003.** Chromosomal differentiation and genome size in three European mountain *Lilium* species. *Plant Systematics and Evolution* **236**: 165–173.

481 **Moscone EA, Baranyi M, Ebert I, Greilhuber J, Ehrendorfer F, Hunziker AT. 2003.** Analysis of nuclear DNA content in *Capsicum* (Solanaceae) by flow cytometry and Feulgen densitometry. *Annals of Botany* **92**: 21–29.

482 **Zonneveld BJM. 2003.** The systematic value of nuclear DNA content in *Agave* L. and some related genera of the Agavaceae. *Bradleya* **21**: 121–125.

483 **Zonneveld BJM, Duncan GD. 2003.** Taxonomic implications of genome size and pollen colour and vitality for species of *Agapanthus* L'Héritier (Agapanthaceae). *Plant Systematics and Evolution* **241**: 115–123.

484 **Zonneveld BJM, Grimshaw JM, Davis AP. 2003.** The systematic value of nuclear DNA content in *Galanthus. Plant Systematics and Evolution* **241**: 89–102.

485 **Baack EJ, Whitney KD, Rieseberg LH. 2005.** Hybridization and genome size evolution: timing and magnitude of nuclear DNA content increases in *Helianthus* homoploid hybrid species. *New Phytologist* **167**: 623–630.

486 **Galloway LF, Etterson JR. 2005.** Population differentiation and hybrid success in *Campanula americana*: geography and genome size. *Journal of Evolutionary Biology* **18**: 81–89.

487 **Stiefkens L, Bernardello G. 2000.** Karyotypes and DNA content in diploid and polyploid *Lycium* (Solanaceae). *Boletín de la Sociedad Argententina de Botánica* **35**: 237–244.

488 **Mikula A, Olas M, Sliwinska E, Rybczynski JJ. 2008.** Cryopreservation by encapsulation of *Gentiana* spp. cell suspensions maintains regrowth, embryogenic competence and DNA content. *CryoLetters* **29**: 409–418.

489 **Horjales M, Redondo N, Blanco A, Rodríguez MA. 2003.** Cantidades de DNA nuclear en árboles y arbustos. *Nova Acta Cientifica Compostelana (Bioloxía)* **13**: 23–33.

490 **Pinheiro de Carvalho MAA, Horjales M, Lucas IC, *et al*. 2000.** Determination of genome size by flow cytometry in *Semele* from the island of Madeira. *Boletim da Sociedade Broteriana* **70**: 5–15.

491 **Jakob SS, Meister A, Blattner FR. 2004.** Considerable genome size variation of *Hordeum* species (Poaceae) is linked to phylogeny, life form, ecology, and speciation rates. *Molecular Biology and Evolution* **21**: 860–869.

492 **Barow M, Meister A. 2003.** Endopolyploidy in seed plants is differently correlated to systematics, organ, life strategy and genome size. *Plant Cell and Environment* **26**: 571–584.

493 **Amsellem L, Chevallier MH, Hossaert-McKey M. 2001.** Ploidy level of the invasive weed *Rubus alceifolius* (Rosaceae) in its native range and in areas of introduction. *Plant Systematics and Evolution* **228**: 171–179.

494 **Schmuths H, Meister A, Horres R, Bachmann K. 2004.** Genome size variation among accessions of *Arabidopsis thaliana. Annals of Botany* **93**: 317–321.

495 **Mabuchi T, Kokubun H, Mii M, Ando T. 2005.** Nuclear DNA content in the genus *Hepatica* (Ranunculaceae). *Journal of Plant Research* **118**: 37–41.

496 **Suda J. 2002.** New DNA ploidy level in *Empetrum* (Empetraceae) revealed by flow cytometry. *Annales Botanici Fennici* **39**: 133–141.

497 **Vilhar B, Vidic T, Jogan N, Dermastia M. 2002.** Genome size and the nucleolar number as estimators of ploidy level in *Dactylis glomerata* in the Slovenian Alps. *Plant Systematics and Evolution* **234**: 1–13.

498 **Borchert T, Fuchs J, Winkelmann T, Hohe A. 2007.** Variable DNA content of *Cyclamen persicum* regenerated via somatic embryogenesis: rethinking the concept of long-term callus and suspension cultures. *Plant Cell Tissue and Organ Culture* **90**: 255–263.

499 **Thiem B, Sliwinska E. 2003.** Flow cytometric analysis of nuclear DNA content in cloudberry (*Rubus chamaemorus* L.) *in vitro* cultures. *Plant Science* **164**: 129–134.

500 **Šiško M, Ivancic A, Bohanec B. 2003.** Genome size analysis in the genus *Cucurbita* and its use for determination of interspecific hybrids obtained using the embryo-rescue technique. *Plant Science* **165**: 663–669.

501 **Ohri D, Bhargava A, Chatterjee A. 2004.** Nuclear DNA amounts in 112 species of tropical hardwoods – New estimates. *Plant Biology* **6**: 555–561.

502 **Garnatje T, Valles J, Garcia S, *et al*. 2004.** Genome size in *Echinops* L. and related genera (Asteraceae, Cardueae): karyological, ecological and phylogenetic implications. *Biology of the Cell* **96**: 117–124.

503 **Bartoš J, Alkhimova O, Dolezelova M, De Langhe E, Doležel J. 2005.** Nuclear genome size and genomic distribution of ribosomal DNA in *Musa* and *Ensete* (Musaceae): taxonomic implications. *Cytogenetic and Genome Research* **109**: 50–57.

504 **Chase MW, Hanson L, Albert VA, Whitten WM, Williams NH. 2005.** Life history evolution and genome size in subtribe Oncidiinae (Orchidaceae). *Annals of Botany* **95**: 191–199.

505 **Grundt HH, Obermayer R, Borgen L. 2005.** Ploidal levels in the arctic-alpine polyploid *Draba lactea* (Brassicaceae) and its low-ploid relatives. *Botanical Journal of the Linnean Society* **147**: 333–347.

506 **Pinto G, Loureiro J, Lopes T, Santos C. 2004.** Analysis of the genetic stability of *Eucalyptus globulus* Labill. somatic embryos by flow cytometry. *Theoretical and Applied Genetics* **109**: 580–587.

507 **Chiche J, Brown SC, Leclerc JC, Siljak-Yakovlev S. 2003.** Genome size, heterochromatin organisation, and ribosomal gene mapping in four species of *Ribes. Canadian Journal of Botany* **81**: 1049–1057.

508 **Dart S, Kron P, Mable BK. 2004.** Characterizing polyploidy in *Arabidopsis lyrata* using chromosome counts and flow cytometry. *Canadian Journal of Botany* **82**: 185–197.

509 **Johnston JS, Pepper AE, Hall AE, *et al*. 2005.** Evolution of genome size in Brassicaceae. *Annals of Botany* **95**: 229–235.

510 **Pires JC, Lim KY, Kovarik A, *et al*. 2004.** Molecular cytogenetic analysis of recently evolved *Tragopogon* (Asteraceae) allopolyploids reveals a karyotype that is additive of the diploid progenitors. *American Journal of Botany* **91**: 1022–1035.

511 **Price HJ, Dillon SL, Hodnett G, Rooney WL, Ross L, Johnston JS. 2005.** Genome evolution in the genus *Sorghum* (Poaceae). *Annals of Botany* **95**: 219–228.

512 **Kuta E, Bohanec B, Dubas E, Vizintin L, Przywara L. 2004.** Chromosome and nuclear DNA study on *Luzula* – a genus with holokinetic chromosomes. *Genome* **47**: 246–256.

513 **Walker DJ, Monino I, Correal E. 2006.** Genome size in *Bituminaria bituminosa* (L.) C.H. Stirton (Fabaceae) populations: separation of "true" differences from environmental effects on DNA determination. *Environmental and Experimental Botany* **159**: 104–116.

514 **Závesky L, Jarolimova V, Stepanek J. 2005.** Nuclear DNA content variation within the genus *Taraxacum* (Asteraceae). *Folia Geobotanica* **40**: 91–104.

515 **Kotseruba V, Gernand D, Meister A, Houben A. 2003.** Uniparental loss of ribosomal DNA in the allotetraploid grass *Zingeria trichopoda* ($2n = 8$). *Genome* **46**: 156–163.

516 **Grattapaglia D, Bradshaw HD. 1994.** Nuclear DNA content of commercially important *Eucalyptus* species and hybrids. *Canadian Journal of Forest Research* **24**: 1074–1078.

517 **Aagaard SMD, Sastad SM, Greilhuber J, Moen A. 2005.** A secondary hybrid zone between diploid *Dactylorhiza incarnata* subsp. *cruenta* and allotetraploid *D. lapponica* (Orchidaceae). *Heredity* **94**: 488–496.

518 **Houben A, Demidov D, Gernand D, Meister A, Leach CR, Schubert I. 2003.** Methylation of histone H3 in euchromatin of plant chromosomes depends on basic nuclear DNA content. *Plant Journal* **33**: 967–973.

519 **Ozkan H, Tuna M, Arumuganathan K. 2003.** Nonadditive changes in genome size during allopolyploidization in the wheat (*Aegilops-Triticum*) group. *Journal of Heredity* **94**: 260–264.

520 **Naganowska B, Wolko B, Sliwinska E, Kaczmarek Z. 2003.** Nuclear DNA content variation and species relationships in the genus *Lupinus* (Fabaceae). *Annals of Botany* **92**: 349–355.

521 **Garcia S, Sanz M, Garnatje T, Kreitschitz A, McArthur ED, Valles J. 2004.** Variation of DNA amount in 47 populations of the subtribe Artemisiinae and related taxa (Asteraceae, Anthemideae): karyological, ecological, and systematic implications. *Genome* **47**: 1004–1014.

522 **Peer WA, Mamoudian M, Lahner B, Reeves RD, Murphy AS, Salt DE. 2003.** Identifying model metal hyperaccumulating plants: germplasm analysis of 20 Brassicaceae accessions from a wide geographical area. *New Phytologist* **159**: 421–430.

523 **Baack EJ. 2004.** Cytotype segregation on regional and microgeographic scales in snow buttercups (*Ranunculus adoneus:* Ranunculaceae). *American Journal of Botany* **91**: 1783–1788.

524 **Naganowska B, Wolko B, Sliwinska E, Kaczmarek Z, Schifino-Wittmann M. 2006.** 2C DNA variation and relationships among New World species of the genus *Lupinus* (Fabaceae). *Plant Systematics and Evolution* **256**: 147–157.

525 **Garcia S, Inceer H, Garnatje T, Valles J. 2005.** Genome size variation in some representatives of the genus *Tripleurospermum. Biologia Plantarum* **49**: 381–387.

526 **Morgan HD, Westoby M. 2005.** The relationship between nuclear DNA content and leaf strategy in seed plants. *Annals of Botany* **96**: 1321–1330.

527 **Talent N, Dickinson TA. 2005.** Polyploidy in *Crataegus* and *Mespilus* (Rosaceae, Maloideae): evolutionary inferences from flow cytometry of nuclear DNA amounts. *Canadian Journal of Botany* **83**: 1268–1304.

528 **Murray BG, De Lange PJ, Ferguson AR. 2005.** Nuclear DNA variation, chromosome numbers and polyploidy in the endemic and indigenous grass flora of New Zealand. *Annals of Botany* **96**: 1293–1305.

529 **Bancheva S, Greilhuber J. 2006.** Genome size in Bulgarian *Centaurea* s.l. (Asteraceae). *Plant Systematics and Evolution* **257**: 95–117.

530 **Obermayer R, Greilhuber J. 2006.** Cryptopolyploidy revisited: the case of *Vinca* (Apocynaceae). *Plant Systematics and Evolution* **256**: 201–208.

531 **Weiss-Schneeweiss H, Greilhuber J, Schneeweiss GM. 2005.** Genome size evolution in holoparasitic *Orobanche* (Orobanchaceae) and related genera. *American Journal of Botany* **93**: 148–156.

532 **Zonneveld BJM, Duncan GD. 2006.** Genome size for the species of *Nerine* Herb. (Amaryllidaceae) and its evident correlation with growth cycle, leaf width and other morphological characters. *Plant Systematics and Evolution* **257**: 251–260.

533 **Pecinka A, Suchankova P, Lysak MA, Travnicek B, Doležel J. 2006.** Nuclear DNA content variation among central European Koeleria taxa. *Annals of Botany* **98**: 117–122.

534 **Vižintin L, Javornik B, Bohanec B. 2006.** Genetic characterization of selected *Trifolium* species as revealed by nuclear DNA content and ITS rDNA region analysis. *Plant Science* **170**: 859–866.

535 **Greilhuber J, Borsch T, Müller K, Worberg A, Porembski S, Barthlott W. 2006.** Smallest angiosperm genomes found in Lentibulariaceae with chromosomes of bacterial size. *Plant Biology* **8**: 770–777.

536 **Garnatje T, Garcia S, Vilatersana R, Valles J. 2006.** Genome size variation in the genus *Carthamus* (Asteraceae, Cardueae): systematic implications and additive changes during allopolyploidization. *Annals of Botany* **97**: 461–467.

537 **Lihová J, Shimizu KK, Marhold K. 2006.** Allopolyploid origin of *Cardamine asarifolia* (Brassicaceae): incongruence between plastid and nuclear ribosomal DNA sequences solved by a single-copy nuclear gene. *Molecular Phylogenetics and Evolution* **39**: 759–786.

538 **Dansi A, Saïnou O, Agbangla C, Ahanhanzo C, Brown S, Adoukonou-Sagbadja H. 2005.** Ploidy level and nuclear DNA content of some accessions of water yam (*Dioscorea alata*) collected at Savè, a district of central Benin. *Plant Genetic Resources Newsletter* **144**: 20–23.

539 **Lafuma L, Balkwill K, Imbert E, Verlaque R, Maurice S. 2003.** Ploidy level and origin of the European invasive weed *Senecio inaequidens* (Asteraceae). *Plant Systematics and Evolution* **243**: 59–72.

540 **Peer WA, Mahmoudian M, Freeman JL, *et al*. 2006.** Assessment of plants from the Brassicaceae family as genetic models for the study of nickel and zinc hyperaccumulation. *New Phytologist* **172**: 248–260.

Schönswetter P, Suda J, Popp M, Weiss-Schneeweiss H, Brochmann C. 2007. Circumpolar phylogeography of *Juncus biglumis* (Juncaceae) inferred from AFLP fingerprints, cpDNA sequences, nuclear DNA content and chromosome numbers. *Molecular Phylogenetics and Evolution* **42**: 92–103.

Kula A, Dudziak B, Sliwinska E, *et al*. 2006. Cytomorphological studies on American and European *Phleum commutatum* Gaud. (Poaceae). *Acta Biologica Cracoviensia Series Botanica* **48**: 99–108.

Grabowska-Joachimiak A, Sliwinska E, Pigula M, Joachimiak A. 2006. Genome size in *Humulus lupulus* L. and *H. japonicus* Siebold & Zucc. (Cannabaceae). *Acta Societatis Botanicorum Poloniae* **75**: 207–214.

Obbard DJ, Harris SA, Buggs RJA, Pannell JR. 2006. Hybridization, polyploidy and the evolution of sexual systems in *Mercurialis* (Euphorbiaceae). *Evolution* **60**: 1801–1815.

Ammiraju JSS, Luo MZ, Goicoechea JL, *et al*. 2006. The *Oryza* bacterial artificial chromosome library resource: construction and analysis of 12 deep-coverage large-insert BAC libraries that represent the 10 genome types of the genus *Oryza*. *Genome Research* **16**: 140–147.

Kochjarová J, Valachovic M, Bureš P, Mráz P. 2006. The genus *Cochlearia* L. (Brassicaceae) in the Eastern Carpathians and adjacent area. *Botanical Journal of the Linnean Society* **151**: 355–364.

Sandoval A, Hocher V, Verdeil JL. 2003. Flow cytometric analysis of the cell cycle in different coconut palm (*Cocos nucifera* L.) tissues cultured *in vitro*. *Plant Cell Reports* **22**: 25–31.

Rival A, Beule T, Barre P, Hamon S, Duval Y, Noirot M. 1997. Comparative flow cytometric estimation of nuclear DNA content in oil palm (*Elaeis guineensis* Jacq.) tissue cultures and seed-derived plants. *Plant Cell Reports* **16**: 884–887.

Maksimovic M, Vidic D, Miloš M, Edita Solic M, Abadžic S, Siljak-Yakovlev S. 2007. Effect of the environmental conditions on essential oil profile in two Dinaric *Salvia* species: *S. brachyodon* Vandas and *S. officinalis* L. *Biochemical Systematics and Ecology* **35**: 473–478.

Castro S, Loureiro J, Rodriguez E, Silveira P, Navarro L, Santos C. 2007. Evaluation of polysomaty and estimation of genome size in *Polygala vayredae* and *P. calcarea* using flow cytometry. *Plant Science* **172**: 1131–1137.

Kentner EK, Arnold ML, Wessler SR. 2003. Characterization of high-copy-number retrotransposons from the large genomes of the Louisiana iris species and their use as molecular markers. *Genetics* **164**: 685–697.

Suda J, Kyncl T, Jarolimova V. 2005. Genome size variation in Macaronesian angiosperms: forty percent of the Canarian endemic flora completed. *Plant Systematics and Evolution* **252**: 215–238.

Pellicer J, Garcia S, Garnatje T, Dariimaa S, Korobkov A, Valles J. 2007. Chromosome numbers in some *Artemisia* (Asteraceae, Anthemideae) species and genome size variation in its subgenus *Dracunculus*: karyological, systematic and phylogenetic implications. *Chromosome Botany* **2**: 45–53.

Barow M, Meister A. 2002. Lack of correlation between AT frequency and genome size in higher plants and the effect of nonrandomness of base sequences on dye binding. *Cytometry* **47**: 1–7.

Šmarda P, Bureš P, Horová L, Foggi B, Rossi G. 2008. Genome size and GC content evolution of *Festuca*: ancestral expansion and subsequent reduction. *Annals of Botany* **101**: 421–433.

Adoukonou-Sagbadja H, Schubert V, Dansi A, *et al*. 2007. Flow cytometric analysis reveals different nuclear DNA contents in cultivated Fonio (*Digitaria* spp.) and some wild relatives from West-Africa. *Plant Systematics and Evolution* **267**: 163–176.

Negron-Ortiz V. 2007. Chromosome numbers, nuclear DNA content, and polyploidy in *Consolea* (Cactaceae), an endemic cactus of the Caribbean islands. *American Journal of Botany* **94**: 1360–1370.

Panda KK, Panigrahy K, Das AB, Panda BB. 2007. Analyses of chromosome number, nuclear DNA content and RAPD profile in three morphotyptes of *Pandanus fascicularis* Lam. *Plant Genetic Resources Newsletter* **152**: 12–22.

Stehlik I, Kron P, Barrett SCH, Husband BC. 2007. Sexing pollen reveals female bias in a dioecious plant. *New Phytologist* **175**: 185–194.

Noirot M, Poncet V, Barre P, Hamon P, Hamon S, De Kochko A. 2003. Genome size variations in diploid African *Coffea* species. *Annals of Botany* **92**: 709–714.

Carvalho CR, Clarindo WR, Praca MM, Araujo FS, Carels N. 2008. Genome size, base composition and karyotype of *Jatropha curcas* L., an important biofuel plant. *Plant Science* **174**: 613–617.

Leong-Škornickovà J, Šída O, Jarolímová V, *et al*. 2007. Chromosome numbers and genome size variation in Indian species of *Curcuma* (Zingiberaceae). *Annals of Botany* **100**: 505–526.

Loureiro J, Rodriguez E, Doležel J, Santos C. 2007. Two new nuclear isolation buffers for plant DNA flow cytometry: a test with 37 species. *Annals of Botany* **100**: 875–888.

Tatum TC, Nunez L, Kushad MM, Rayburn AL. 2006. Genome size variation in pumpkin (*Cucurbita* sp.). *Annals of Applied Biology* **149**: 145–151.

Leitch IJ, Beaulieu JM, Cheung K, Hanson L, Lysak M, Fay MF. 2007. Punctuated genome size evolution in Liliaceae. *Journal of Evolutionary Biology* **20**: 2296–2308.

Leitch IJ, Hanson L, Lim KY, *et al*. 2008. The ups and downs of genome size evolution in polyploid species of *Nicotiana* (Solanaceae). *Annals of Botany* **101**: 805–814.

Boscaiu M, Ellul P, Soriano P, Vicente O. 2008. Nuclear DNA content variation in *Halimium* and *Xolantha* (Cistaceae). *Plant Biosystems* **142**: 17–23.

McNeal J, Arumugunathan K, Kuehl J, Boore J, dePamphilis C. 2007. Systematics and plastid genome evolution of the cryptically photosynthetic parasitic plant genus Cuscuta (Convolvulaceae). *BMC Biology* **5**: 55.

Suda J, Krahulcová A, Trávnícek P, Rosenbaumová R, Peckert T, Krahulec F. 2007. Genome size variation and species relationships in *Hieracium* sub-genus *Pilosella* (Asteraceae) as inferred by flow cytometry. *Annals of Botany* **100**: 1323–1335.

Fujimoto S, Ito M, Matsunaga S, Fukui K. 2005. An upper limit of the ratio of DNA volume to nuclear volume exists in plants. *Genes and Genetic Systems* **80**: 345–350.

Ramírez-Morillo IM, Brown GK. 2001. The origin of the low chromosome number in *Cryptanthus* (Bromeliaceae). *Systematic Botany* **26**: 722–726.

Bacic T, Jogan N, Dolenc Koce J. 2007. *Luzula* sect. *Luzula* in the south-eastern Alps – karyology and genome size. *Taxon* **56**: 129–136.

Blocka-Wandas M, Sliwinska E, Grabowska-Joachimiak A, Musial K, Joachimiak AJ. 2007. Male gametophyte development and two different DNA classes of pollen grains in *Rumex acetosa* L., a plant with an XX/XY1Y2 sex chromosome system and a female-biased sex ratio. *Sexual Plant Reproduction* **20**: 171–180.

Kotseruba V, Pistrick K, Gernand D, Meister A, Ghukasyan A, Gabrielyan I, Houben A. 2005. Characterisation of the low-chromosome number grass *Colpodium versicolor* (Stev.) Schmalh. ($2n = 4$) by molecular cytogenetics. *Caryologia* **58**: 241–245.

Ebert I and Till W (University of Vienna, Austria, pers. comm., 1997).

Halkka O. 1964. A photometric study of the *Luzula* problem. *Hereditas* **52**: 81–88.

Husband B and Kron P (University of Guelph, Canada, pers. comm., 2008).

578 **Rossi AAB, Clarindo WR, Carvalho CR, de Oliveira LO. 2008.** Karyotype and nuclear DNA content of *Psychotria ipecacuanha*: a medicinal species. *Cytologia* **73**: 53–60.
579 **Lysák MA, Rostková AR, Dixon JM, Rossi G, Doležel J. 2000.** Limited genome size variation in *Sesleria albicans. Annals of Botany* **86**: 399–403.
580 **Dolenc Koce J, Škondric S, Bacic T, Dermastia M. 2008.** Amounts of nuclear DNA in marine halophytes. *Aquatic Botany* **89**: 385–389.
581 **Zonneveld BJM. 2008.** The systematic value of nuclear DNA content for all species of *Narcissus* L. (Amaryllidaceae). *Plant Systematics and Evolution* **275**: 109–132.
582 **Loureiro J, Kopecký D, Castro S, Santos C, Silveira P. 2007.** Flow cytometric and cytogenetic analyses of Iberian Peninsula *Festuca* spp. *Plant Systematics and Evolution* **269**: 89–105.
583 **Achigan-Dako E, Fuchs J, Ahanchede A, Blattner F. 2008.** Flow cytometric analysis in *Lagenaria siceraria* (Cucurbitaceae) indicates correlation of genome size with usage types and growing elevation. *Plant Systematics and Evolution* **276**: 9–19.
584 **Loureiro J, Pinto G, Lopes T, Doležel J, Santos C. 2005.** Assessment of ploidy stability of the somatic embryogenesis process in *Quercus suber* L. using flow cytometry. *Planta* **221**: 815–822.
585 **Loureiro J, Rodriguez E, Gomes A, Santos C. 2007.** Genome size estimations on *Ulmus minor* Mill., *Ulmus glabra* Huds., and *Celtis australis* L. using flow cytometry. *Plant Biology* **9**: 541–544.
586 **Loureiro J, Rodriguez E, Costa A, Santos C. 2007.** Nuclear DNA content estimations in wild olive (*Olea europaea* L. subsp. *europaea* var. *sylvestris* Brot.) and Portuguese cultivars of *O. europaea* using flow cytometry. *Genetic Resources and Crop Evolution* **54**: 21–25.
587 **Loureiro J, Rodriguez E, Doležel J, Santos C. 2006.** Comparison of four nuclear isolation buffers for plant DNA flow cytometry. *Annals of Botany* **98**: 679–689.
588 **Brito G, Loureiro J, Lopes T, Rodriguez E, Santos C. 2008.** Genetic characterisation of olive trees from Madeira Archipelago using flow cytometry and microsatellite markers. *Genetic Resources and Crop Evolution* **55**: 657–664.
589 **Leal F, Loureiro J, Rodriguez E, Pais MS, Santos C, Pinto-Carnide O. 2006.** Nuclear DNA content of *Vitis vinifera* cultivars and ploidy level analyses of somatic embryo-derived plants obtained from anther culture. *Plant Cell Reports* **25**: 978–985.
590 **Castro S, Loureiro J, Santos C, Ater M, Ayensa G, Navarro L. 2007.** Distribution of flower morphs, ploidy level and sexual reproduction of the invasive weed *Oxalis pes-caprae* in the western area of the Mediterranean region. *Annals of Botany* **99**: 507–517.
591 **Rosenbaumová R, Placková I, Suda J. 2004.** Variation in *Lamium* subg. *Galeobdolon* (Lamiaceae) – insights from ploidy levels, morphology and isozymes. *Plant Systematics and Evolution* **244**: 219–244.
592 **Johnston S (pers. comm., 2009).**
593 **Mahelka V, Suda J, Jarolímová V, Trávnícek P, Krahulec F. 2005.** Genome size discriminates between closely related taxa *Elytrigia repens* and *E. intermedia* (Poaceae: Triticeae) and their hybrid. *Folia Geobotanica* **40**: 367–384.
594 **Tuna M, Vogel KP, Arumuganathan K. 2006.** Cytogenetic and nuclear DNA content characterization of diploid *Bromus erectus* and *Bromus variegatus. Crop Science* **46**: 637–641.
595 **Tuna M, Vogel KP, Arumuganathan K. 2005.** Genome size and Giemsa C-banded karyotype of tetraploid *Bromus ciliatus* L. *Euphytica* **146**: 177–182.
596 **Kikuchi S, Tanaka H, Shiba T, Mii M, Tsujimoto H. 2006.** Genome size, karyotype, meiosis and a novel extra chromosome in *Torenia fournieri*, *T. baillonii* and their hybrid. *Chromosome Research* **14**: 665–672.
597 **Temsch EM, Greilhuber J, Hammett KRW, Murray BG. 2008.** Genome size in *Dahlia* Cav. (Asteraceae-Coreopsideae). *Plant Systematics and Evolution* **276**: 157–166.
598 **Siljak-Yakovlev S, Solic ME, Catrice O, Brown SC, Papes D. 2005.** Nuclear DNA content and chromosome number in some diploid and tetraploid *Centaurea* (Asteraceae: Cardueae) from the Dalmatia region. *Plant Biology* **7**: 397–404.
599 **Lysák MA, Koch MA, Beaulieu JM, Meister A, Leitch IJ. 2009.** The dynamic ups and downs of genome size evolution in Brassicaceae. *Molecular Biology and Evolution* **26**: 85–98.
600 **Meng RG, Finn C. 2002.** Determining ploidy level and nuclear DNA content in *Rubus* by flow cytometry. *Journal of the American Society for Horticultural Science* **127**: 767–775.
601 **Vaughan HE, Taylor S, Parker JS. 1997.** The ten cytological races of the *Scilla autumnalis* species complex. *Heredity* **79**: 371–379.
602 **Lysák MA, Cheung K, Kitschke M, Bureš P. 2007.** Ancestral chromosomal blocks are triplicated in Brassiceae species with varying chromosome number and genome size. *Plant Physiology* **145**: 402–410.
603 **Souza MM, Palomino G, Pereira TNS, *et al*. 2003.** Variação interspecífica do tamanho do genoma em *Passiflora* spp. (Passifloraceae). In: *Il Congresso Brasileiro de Melhoramento de Plantas 23 a 26 de abril de 2003.* SBMP, Livro electrônico, 297–302.
604 **Eilam T, Anikster Y, Millet E, Manisterski J, Feldman M. 2008.** Nuclear DNA amount and genome downsizing in natural and synthetic allopolyploids of the genera *Aegilops* and *Triticum. Genome* **51**: 616–627.
605 **Eilam T, Anikster Y, Millet E, Manisterski J, Sag-Assif O, Feldman M. 2007.** Genome size and genome evolution in diploid Triticeae species. *Genome* **50**: 1029–1037.
606 **Baird WV, Estager AS, Wells JK. 1994.** Estimating nuclear DNA content in Peach and related diploid species using laser flow cytometry and DNA hybridization. *Journal of the American Society for Horticultural Science* **119**: 1312–1316.
607 **Price HJ (pers. comm., 1994).**
608 **Doležalová I, Lebeda A, Janecek J, Číhalíková J, Krístková E, Vránova O. 2002.** Variation in chromosome numbers and nuclear DNA contents in genetic resources of *Lactuca* L. species (Asteraceae). *Genetic Resources and Crop Evolution* **49**: 383–395.
609 **Huff DR, Palazzo AJ. 1998.** Fine fescue species determination by laser flow cytometry. *Crop Science* **38**: 445–450.
610 **Boyko EV, Badaev NS, Maximov NG, Zelenin AV. 1984.** Does DNA content change in the course of Triticale breeding. *Cereal Research Communication* **12**: 99–100.
611 **Blondon F, Marie D, Brown S, Kondorosi A. 1994.** Genome size and base composition in *Medicago sativa* and *Medicago truncatula* species. *Genome* **37**: 264–270.
612 **Hanson L, Boyd A, Johnson MAT, Bennett MD. 2005.** First nuclear DNA C-values for 18 eudicot families. *Annals of Botany* **96**: 1315–1320.
613 **Tuskan GA, DiFazio S, Jansson S, *et al.* 2006.** The genome of black cottonwood, *Populus trichocarpa* (Torr. & Gray). *Science* **313**: 1596–1604.
614 **Paterson AH, Bowers JE, Bruggmann R, *et al.* 2009.** The *Sorghum bicolor* genome and the diversification of grasses. *Nature* **457**: 551–556.
615 **The International Brachypodium Initiative. 2010.** Genome sequencing and analysis of the model grass *Brachypodium distachyon. Nature* **463**: 763–768.
616 **Zonneveld BJM. 2010.** New record holders for maximum genome size in eudicots and monocots. *Journal of Botany* **2010**: Article ID 527357. doi:10.1155/2010/527357.
617 **Pellicer J, Fay MF, Leitch IJ. 2010.** The largest eukaryotic genome of them all? *Botanical Journal of the Linnean Society* **164**: 10–15.