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SPECIAL PAPER

Global patterns of plant diversity and floristic knowledge

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ABSTRACT

Aims We present the first global map of vascular plant species richness by ecoregion and compare these results with the published literature on global priorities for plant conservation. In so doing, we assess the state of floristic knowledge across ecoregions as described in floras, checklists, and other published documents and pinpoint geographical gaps in our understanding of the global vascular plant flora. Finally, we explore the relationships between plant species richness by ecoregion and our knowledge of the flora, and between plant richness and the human footprint – a spatially explicit measure of the loss and degradation of natural habitats and ecosystems as a result of human activities.

Location Global.

Methods Richness estimates for the 867 terrestrial ecoregions of the world were derived from published richness data of *c.* 1800 geographical units. We applied one of four methods to assess richness, depending on data quality. These included collation and interpretation of published data, use of species–area curves to extrapolate richness, use of taxon-based data, and estimates derived from other ecoregions within the same biome.

Results The highest estimate of plant species richness is in the Borneo lowlands ecoregion (10,000 species) followed by nine ecoregions located in Central and South America with ≥ 8000 species; all are found within the Tropical and Subtropical Moist Broadleaf Forests biome. Among the 51 ecoregions with ≥ 5000 species, only five are located in temperate regions. For 43% of the 867 ecoregions, data quality was considered good or moderate. Among biomes, adequate data are especially lacking for flooded grasslands and flooded savannas. We found a significant correlation between species richness and data quality for only a few biomes, and, in all of these cases, our results indicated that species-rich ecoregions are better studied than those poor in vascular plants. Similarly, only in a few biomes did we find significant correlations between species richness and the human footprint, all of which were positive.

Main conclusions The work presented here sets the stage for comparisons of degree of concordance of plant species richness with plant endemism and vertebrate species richness: important analyses for a comprehensive global biodiversity strategy. We suggest: (1) that current global plant conservation strategies be reviewed to check if they cover the most outstanding examples of regions from each of the world's major biomes, even if these examples are species-poor compared with other biomes; (2) that flooded grasslands and flooded savannas should become a global priority in collecting and compiling richness data for vascular plants; and (3) that future studies which rely upon species–area

calculations do not use a uniform parameter value but instead use values derived separately for subregions.

Keywords

Conservation, data quality, ecoregions, human footprint, representation, species richness, vascular plants, *z* values.

INTRODUCTION

Studies of global patterns of plant species richness are few in number and those published to date have not been made within an explicit geographical framework (Malyshev, 1975; Barthlott *et al.*, 1996, 1999, in press; Mutke & Barthlott, 2005). This limits the use of these maps to set rigorous global biodiversity priorities. Plants represent 10 times as many species as all terrestrial vertebrates combined (Groombridge & Jenkins, 2002). They also play a dominant role in determining the life histories of millions of invertebrate species, serve as the foundation of most foodwebs (Huston, 1994), and play a vital role in human welfare and economic development. Despite their importance and numerical abundance, however, vascular plants are often given less consideration in evaluating global networks of protected areas and in guiding efforts to improve those networks than are vertebrates (De Klerk *et al.*, 2004; Fjeldså *et al.*, 2004; Burgess *et al.*, in press, but see Myers *et al.*, 2000). To address this shortcoming, comprehensive studies of vascular plant diversity are essential.

One approach of priority-setting applies area-selection methods to grid-based data, serving the aim of maximizing the number of species or other measures of biodiversity within a set of areas (Williams *et al.*, 1996; Faith, 2002). However, this requires data sets of grid-based distribution maps which, on the global scale, are still lacking and will presumably continue to be out of reach in the near future for vascular plants and practically all other large groups of organisms. As an alternative strategy, Olson & Dinerstein (1998) proposed the selection of a set of ecoregions from all major biomes and biogeographical realms. However, that study was mainly based on animal data, lacking the important group of vascular plants. One major aim of the present paper is to fill this gap by providing a global data set of vascular plant species richness on the scale of ecoregions.

Ecoregions are relatively large units of land delineated to reflect the boundaries of natural communities of animal and plant species in their natural state. Several studies (Dinerstein *et al.*, 1995; Olson & Dinerstein, 1998; Ricketts *et al.*, 1999; Olson *et al.*, 2001; Wikramanayake *et al.*, 2001; Burgess *et al.*, 2004) used this framework because of the advantages that a system following natural boundaries has compared with political borders or grid cells. Other global studies of biodiversity priorities have now adopted the global ecoregions map as a basemap to compare distributions of biodiversity. For example, The Nature Conservancy has adopted ecoregions as a framework to guide their conservation work worldwide (Hoekstra *et al.*, 2005), and the biodiversity hotspots adopted by Conservation International (Myers *et al.*, 2000) are now adjusted to coincide with ecoregion boundaries (T. Brooks, pers. comm.).

A comprehensive global map of plant diversity will powerfully inform biogeographical and conservation work in many ways, three of which we highlight in this paper. First, it will help to evaluate previous priority-setting efforts. Several conservation assessments (e.g. Davis *et al.*, 1994, 1995, 1997; Myers *et al.*, 2000) target those areas with extremely rich plant biotas and thus remain limited mostly to tropical moist forests and Mediterranean systems. In contrast, other global priority-setting efforts (Olson & Dinerstein, 1998) advocate a representation approach to setting priorities, such that the most outstanding examples within each biome are included. Biomes are very coarse classifications of ecosystem types, based largely on dominant vegetation (e.g. temperate grasslands and savannas); each biome contains distinct species assemblages and ecological processes and each therefore requires effective conservation (Olson *et al.*, 2001). The necessary data sets for such global representation analyses exist for vertebrates, with richness and endemism data now available for more than 30,000 species of birds, mammals, reptiles and amphibians (WWF, 2005; J. Lamoreux, pers. comm.). A comparable global map of plant richness would offer more comprehensive analyses of biodiversity patterns worldwide.

Secondly, a global data set of plant richness will help to prioritize efforts for future surveys and data collection. Frodin (2001) made a major contribution to this aim by identifying 'areas that most need floras'. However, with the information provided by that study it is difficult to answer two sorts of questions: Which are the most understudied biomes and which are the areas where richness data on the ecoregional scale are missing? We therefore put a special focus on a systematic assessment of data quality that points to knowledge gaps and can also guide the further processing and interpretation of the richness data presented here.

Finally, this data set can be used for a wide set of analyses relating biodiversity patterns to anthropogenic threats or to abiotic drivers of species richness. We provide an example of this type of analysis by comparing plant diversity, knowledge status and human footprint (Sanderson *et al.*, 2002) for each terrestrial ecoregion.

METHODS

Species richness

All 867 terrestrial ecoregions (Olson *et al.*, 2001; WWF, 2001) were subject to an individual assessment, and estimates of species numbers were derived from published and unpublished richness data and from a variety of additional information (for a full bibliography see Appendix S1). For each ecoregion, we chose the most appropriate from four different methods. In cases where a single method was suspect, we employed more than one method to compare results and derive a final estimate of species richness.

The assessment is mainly based on a compilation of species richness data for more than 1800 selected geographical units (hereafter referred to as OGUs, operational geographical units) derived from the literature. This data set includes both administrative units, such as countries or protected areas, and natural units, such as mountain ranges or vegetation units. It is a subset of a larger data set of which many OGUs were eliminated because they were rated unsuitable for this approach (e.g. due to large differences in area compared with the size of the ecoregion). This data set was also used by Mutke & Barthlott (2005) and Barthlott *et al.* (in press). A previous, considerably smaller version of it formed the basis for the global plant diversity maps produced by Barthlott *et al.* (1996, 1999). We applied the following four methods.

Direct use of published data

For many ecoregions, published species numbers were available, especially for islands and for 110 ecoregions covered in the assessment of North American ecoregions by Ricketts *et al.* (1999). We adopted most of them without any change (this applied to *c.* 18% of the 867 ecoregions). Other figures (for an additional *c.* 17% of ecoregions) were checked thoroughly on the basis of the other three methods and corrected, if deemed necessary. This was the case for the expert estimates for 140 ecoregions in the Indo-Pacific published by Wikramanayake *et al.* (2001) and for a few other ecoregions.

Extrapolation of richness data with species–area curves

Richness values of OGUs overlapping with an ecoregion were extrapolated up, or in some cases down, to the size of the ecoregion using the power model of the species–area relationship:

$$S_e = S_u \left(\frac{A_e}{A_u}\right)^z$$

where S_e is the estimated number of species in the ecoregion, S_u the species number of the OGU, A_e the area of the ecoregion, A_u the area of the OGU and z a parameter the value of which was empirically determined by regression analysis using the OGUs for each biome (see Olson *et al.*, 2001; WWF, 2001 for delineation of biomes). The latter was made for the global extent of each biome because apart from the biome 'Tropical and Subtropical Moist Broadleaf Forests', the data set for each biome was too small to be split up into subregions still yielding significant results for all subregions.

When more than one OGU overlapped with an ecoregion, the results of the extrapolation were weighted according to the suitability of OGUs, such as difference in size and degree of overlap. Both a high area of overlap and a small difference in total area size are factors that increase the accuracy of richness extrapolations and hence the weight that underlying data were assigned when considering more than one OGU for the richness estimate of an ecoregion. Further criteria were the degree to which overlapping OGUs were rated to be representative for the ecoregion with regard to factors relevant for the richness estimate such as vegetation type, topographic structure and climate.

Depending on how we rated the suitability of the overlapping OGUs and their richness figures to be used for this extrapolation, individual corrections to the extrapolated species numbers were often made taking into account further qualitative and quantitative information, such as vegetation, geodiversity, precipitation and state of floristic research in the area. Especially in cases when the difference in area between OGU and ecoregion was higher than one decimal order of magnitude, we treated the resulting extrapolated figures with special care and made rather conservative estimates of species richness based on them. This was made with respect to the uncertainty about the real slope of the species–area curve in that area and the tendency of the power model to overestimate richness when extrapolating to areas that are much larger than the OGU (Palmer, 1990). This method was applied to *c.* 53% of ecoregions.

Use of taxon-based data

Krupnick & Kress (2003) conducted a study on 84 Indo-Pacific ecoregions. For this study area, they compiled distribution data of all species of the seven families Bignoniaceae, Dipterocarpaceae, Ericaceae, Euphorbiaceae, Fagaceae, Legumes and Rosaceae from literature sources. The families were chosen with the aim of using the combined data as an indicator for the richness of all vascular plants. We derived estimates of total species richness by extrapolating the species numbers of the underlying data set (G. Krupnick, unpubl. data) up to the total flora of each ecoregion, using a factor which reflects the ratio between total vascular plant richness and richness in the indicator families from known literature data. For example, there were 629 'indicator species' in the Philippines according to that data set, 178 of which (= 28.3%) occur in the Mindoro rain forests, one of the Philippine ecoregions. According to Davis *et al.* (1986), the total number of plant species in the Philippines is 8900. Hence, we predicted 2519 species (= 8900 × 28.3%) for the Mindoro rain forests. This method was applied to the 84 ecoregions mentioned above, i.e. *c.* 10% of all ecoregions.

Estimates based on other ecoregions

When no data were available for an ecoregion, we made estimates based on the richness of OGUs located elsewhere in the same biome, on richness estimates for similar ecoregions and on all further relevant information available as mentioned above. For *c.* 19% of ecoregions, i.e. for all ecoregions rated 'very poor' in the data quality assessment described below, this was the sole method applied, and it was used as a complementary method for *c.* 30% of ecoregions.

In all cases, in making our richness assessments, we tried to estimate as closely as possible, the total number of vascular plant species naturally occurring in each terrestrial ecoregion before industrial-age human interference. However, it was often difficult to judge the degree to which richness figures were reflecting an anthropogenically altered state of vegetation or the degree to which they included introduced species and species that followed human alteration.

Because so many different qualitative and quantitative criteria were considered, estimating richness of ecoregions using the four above methods included a certain degree of subjective decision-making in many cases. Of course, using a strict algorithm throughout the process would have increased the repeatability of the method. However, the design of the algorithm would also have required subjective decisions. Furthermore, transforming qualitative and semi-quantitative into quantitative data would have produced an unmanageable workload for an undertaking that covers 867 ecoregions. Being confronted with the decision of either (1) using a strict algorithm and thus excluding a wide array of available data or (2) using all available quantitative, semi-quantitative, and qualitative data and thus somewhat reducing the repeatability of the method, we chose the latter option. The reader is given two sorts of information by which to judge the quality of each richness estimate: first, the index reflecting the suitability and quality of underlying data explained below and secondly, the full bibliography (Appendix S1).

Biodiversity information availability

The suitability and quality of data available for estimating species richness (hereafter referred to as data quality) was rated on a scale ranging from 1 to 4 for each ecoregion in the following way. Whenever we found a richness estimate in the literature for an OGU identical or practically identical to the ecoregion boundary, the index value 1 (= good) was assigned. When OGUs overlapped with the ecoregion, we either assigned a value of 2 (= moderate) or 3 (= poor), depending on the extent of the overlap and the difference in area between OGUs and the targeted ecoregion. Both a low area of overlap and a large difference in total area size are factors which reduce the accuracy of richness estimates and hence of the data quality rating. Further criteria were the degree to which overlapping OGUs were rated to be representative for the ecoregion with regard to vegetation type and other factors relevant for the richness estimate. When no OGUs overlapped with an ecoregion or when the overlapping OGUs were too different in size or overall ecological composition to derive a richness estimate, we assigned an index value of 4 (= very poor). After assigning index scores as outlined above, we changed some of them when the probability was rated high that richness data were heavily influenced by one of the following factors which have a negative effect on data quality: first, when species numbers included an unidentified but presumably large number of aliens or subspecies; secondly, when the species numbers presumably reflected a situation heavily altered by human impact; and thirdly, when we had reason to assume that the reliability of the source was poor. However, it remains a source of uncertainty that in most cases richness figures were not accompanied in the literature consulted by comments on the state of floristic research in the study area. Hence, even when we rated the quality of underlying data to be good for an ecoregion, the richness assessment may include some error.

Regression analyses between species richness, human footprint and data quality

We conducted regression analyses between the three indicators: richness, data quality and mean human footprint (Sanderson *et al.*, 2002) per ecoregion. The human footprint is an additive, aggregate index of human activity, combining data on human population, land transformation, and the density of electric power and transport infrastructure. For these purposes, species richness values were calculated for a standard area using the z values derived from the regression analysis in order to eliminate the effect of area.

RESULTS

Species richness

The map of plant richness reflects the well-known latitudinal diversity gradient (Fig. 1a). The Borneo lowlands contain more vascular plant species than any other ecoregion on earth, with 10,000 species, followed by nine ecoregions with ≥ 8000 species each in Central and South America. Of the 51 ecoregions with ≥ 5000 species, all but five are located in the Tropical and Subtropical Moist Broadleaf Forests biome, which is unequalled in the mean species richness of its ecoregions (Table 1). The notable exceptions are five temperate forest ecoregions: two forest ecoregions in SW China (Qionglai-Minshan Conifer Forests and Yunnan Plateau Subtropical Evergreen Forests), the Montane Fynbos and Renosterveld (Southern Africa), the Alps conifer and mixed forests (Europe), and the Caucasus mixed forests (located between Europe and Asia) (see Appendix S2 for a complete list of vascular plant richness by ecoregion).

By classifying ecoregions in a hierarchical fashion, we can also display for the first time the most species-rich ecoregions within each biome and within each of the eight biogeographical realms as delineated by Olson *et al.* (2001) and WWF (2001)

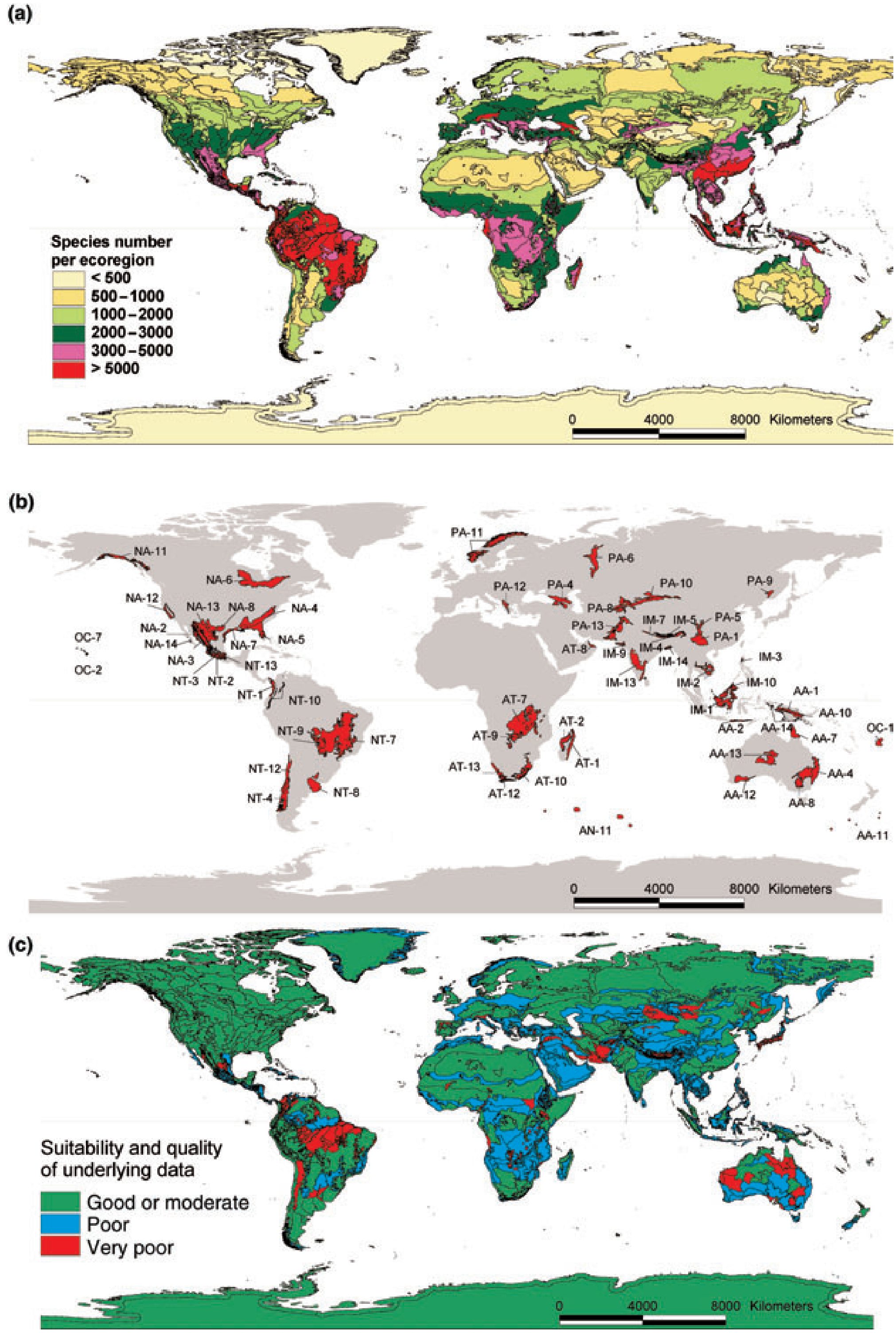

Figure 1 Results of the assessment of vascular plant species richness and data quality. Projection: Geographic. (a) Vascular plant species per ecoregion. (b) Ecoregions highest in species richness in each biome within each biogeographical realm. Realms: AA, Australasia; AN, Antarctic; AT, Afrotropics; IM, IndoMalay; NA, Nearctic; NT, Neotropics; OC, Oceania; PA, Palearctic. Biomes: 1 – tropical and subtropical moist broadleaf forests; 2 – tropical and subtropical dry broadleaf forests; 3 – tropical and subtropical coniferous forests; 4 – temperate broadleaf and mixed forests; 5 – temperate conifer forests; 6 – boreal forests/taiga; 7 – tropical and subtropical grasslands, savannas and shrublands; 8 – temperate grasslands, savannas and shrublands; 9 – flooded grasslands and savannas; 10 – montane grasslands and shrublands; 11 – tundra; 12 – mediterranean forests, woodlands and scrub; 13 – deserts and xeric shrublands; 14 – mangroves. (c) Suitability and quality of underlying plant data at the scale of ecoregions.

No.	Biome	z	Mean plant species richness	Mean of data quality index
1	Tropical and subtropical moist broadleaf forests	0.24–0.33*	3161	2.6
2	Tropical and subtropical dry broadleaf forests	0.21	1440	2.8
3	Tropical and subtropical coniferous forests	0.19	2225	2.9
4	Temperate broadleaf and mixed forests	0.17	1909	2.3
5	Temperate coniferous forests	0.14	1570	1.9
6	Boreal forests/taiga	0.16	822	1.5
7	Tropical and subtropical grasslands, savannas and shrublands	0.18	1731	2.6
8	Temperate grasslands, savannas and shrublands	0.12	1372	2.1
9	Flooded grasslands and savannas	0.12	767	3.5
10	Montane grasslands and shrublands	0.17	1397	2.9
11	Tundra	0.13	438	1.6
12	Mediterranean forests, woodlands and scrub	0.20	2294	2.7
13	Deserts and xeric shrublands	0.11	1078	2.7
14	Mangroves	†	205	3.9

*In this biome, the underlying data set was large enough to be split up into four subregions, yielding the following z values: Asia 0.26, Central America 0.33, South America 0.32, Australia and Africa 0.24.
†No figure given due to poor data situation.

Table 1 z values as derived from linear regressions of the log–log transformed raw data (all correlations were significant at $P < 0.05$), mean plant species richness per ecoregion and data quality and suitability index (ranging from 1 = good to 4 = very poor). Note that ecoregions differ in size, which limits the comparability of mean plant species richness per ecoregion

(Fig. 1b). In the few cases where two or three ecoregions shared the highest rank in a given biome, we selected the ecoregion highest in data quality and smallest in area (see Appendix S3 for a complete list of richest ecoregions by biome).

Calculated z values used to estimate plant richness differed widely among biomes, ranging from 0.11 (deserts and xeric shrublands) to 0.33 (Central American tropical moist forests) (Table 1).

Analysis of data quality

The suitability and quality of underlying data was rated to be good for 18% of the ecoregions, moderate for 25%, poor for 38% and very poor for 19% (Fig. 1c). Large regions lacking virtually any suitable data on vascular plant richness included the southern section of the Amazon basin, northern Colombia, some parts of Northern China, most of Japan, several ecoregions in arid Australia and large parts of the area covered by the three neighbouring countries of Iran, Afghanistan and Pakistan. Boreal forests, taiga and tundra were characterized by high quality data, while mangroves and flooded grasslands and savannas were deemed generally data-poor (Table 1) (see Appendix S2 for more detailed information on data quality).

The regression analysis between richness per standard area and the data quality index yielded significant results for four biomes: the tropical and subtropical moist broadleaf forests, the tropical and subtropical grasslands, savannas and shrublands, the montane grasslands and shrublands, and the deserts and xeric shrublands. All of these cases pointed to the tendency of better data quality being found in ecoregions with higher species richness. In all other biomes we found no significant relationship (Table 2).

Human footprint

Worldwide, richness standardized for area and human footprint were positively related, i.e. a higher human footprint can be found in ecoregions with higher species richness (Table 2). Within biomes, however, this positive relationship only holds for five biomes: the boreal forests and taiga, the temperate grasslands, savannas and shrublands, the montane grasslands and shrublands, the tundra and the deserts and xeric shrublands.

DISCUSSION

The general trends of plant species richness (Fig. 1a) are concordant with previous studies (Malyshev, 1975; Barthlott *et al.*, 1996, 1999, in press; Mutke & Barthlott, 2005). These previous maps present species density values for standard area sizes throughout the world. However, due to a lack of data on species turnover, their richness figures cannot be easily transferred to an explicit geographical framework of planning units, which is a prerequisite for their use in conservation strategies and other analyses.

The data presented here refer to the now widely used ecoregions scheme (see Introduction) and thus have a greater

Table 2 Results of regression analysis between richness per standard area, data quality and mean human footprint. All significant correlations between richness and human footprint were positive. All significant correlations between richness and the data quality index were negative, actually indicating a positive correlation between data quality and richness due to the fact that higher index values denote a lower data quality. No analysis was made for mangroves because of the poor data situation

	r^2 of data quality vs. richness	r^2 of footprint vs. richness
Global	n.s.	0.09***
Tropical and subtropical moist broadleaf forests	0.06**	n.s.
Tropical and subtropical dry broadleaf forests	n.s.	n.s.
Tropical and subtropical coniferous forests	n.s.	n.s.
Temperate broadleaf and mixed forests	n.s.	n.s.
Temperate coniferous forests	n.s.	n.s.
Boreal forests/taiga	n.s.	0.18*
Tropical and subtropical grasslands, savannas and shrublands	0.21**	n.s.
Temperate grasslands, savannas and shrublands	n.s.	0.14*
Flooded grasslands and savannas	n.s.	n.s.
Montane grasslands and shrublands	0.10*	0.25***
Tundra	n.s.	0.14*
Mediterranean forests, woodlands and scrub	n.s.	n.s.
Deserts and xeric shrublands	0.06*	0.09**

$*P < 0.05$; $**P < 0.01$; $***P < 0.001$; n.s., not significant.

potential to serve as the starting point for further conservation or biogeographical studies based on this framework. These include correlation analyses with other data sets, such as plant endemism or the richness of other taxa. Furthermore, an evaluation of current priority sets based on our selection of 63 ecoregions could be performed. We suggest that current global plant conservation strategies are reviewed to check if they cover the most outstanding examples of regions from each of the major biomes of the world, even if these examples might be rather species-poor compared with other biomes.

We regard it as a major methodological asset of the richness data presented here that they do not rely on a uniform parameter value of the species–area curve but on *z* values differentiated by biome. Another aspect of the data set that increases its value for further analyses is the data quality index associated with each richness figure. We also used this index to identify gaps in the knowledge on plant diversity that can guide future priorities in data collection and compilation, both by regional location and by biome.

Global priority setting for conservation

The set of 63 ecoregions richest in their respective combination of biome and biogeographical realm (Fig. 1b) overlaps highly with various priority sets that have been proposed, but marked differences can also be found. Among the 63 ecoregions, 12 are not part of a Global 200 region (Olson & Dinerstein, 1998) and hence might be missed in that strategy from the point of view of plant conservation. A more detailed assessment, including levels of endemism and further criteria, could clarify whether they deserve to be included in the Global 200 selection.

Our set includes several ecoregions that are not high in richness when compared with ecoregions in other biomes, but are some of the most outstanding examples of biomes underrepresented in either the 25 hotspots delimited by Myers *et al.* (2000) or the 234 Centres of Plant Diversity (Davis *et al.*, 1994, 1995, 1997), or both. Examples include the Sundarbans mangroves (India and Bangladesh) and the Baluchistan xeric woodlands (Pakistan and Afghanistan).

Given the different approaches of the sets of regions mentioned above, it is not surprising that they only partly overlap. However, these differences show where future priority setting could be improved. The Global 200 were mainly based on animal data, a shortcoming that can now be addressed with the data presented here. The Centres of Plant Diversity Project (Davis *et al.*, 1994, 1995, 1997) was a major undertaking of data compilation for global plant conservation strategies but did not give any explicit definition of rules for an area to be included in the selection of priority sites. The hotspots approach locates a set of regions that represent many endemic species in a small total area, including level of threat and loss of primary vegetation as further criteria. However, there are further important aspects of biodiversity, such as maximized floristic complementarity (Küper *et al.*, 2004) or the diversity of biomes, lacking in that approach. We regard it as essential that a selection of the most valuable areas covers all major ecosystems.

Gaps in floristic knowledge

Data quality and its spatial variation can be interpreted both from the broad geographical perspective across all biomes and within each biome separately. Among the areas with very poor underlying data (Fig. 1c), the southern section of the Amazon basin and northern Colombia are especially remarkable because they are presumably the most species-rich of all data gaps. They are also the only two areas we identified that overlap with the 'areas that most need floras' (Frodin, 2001). However, due to the different approach, it is unsurprising that the overlap is so small. In this study we only focused on species richness data, which can also be taken from extrapolations and expert estimates if better sources, such as floras, are not available, whereas Frodin (2001) was pointing out the lack of floras and thus of much more comprehensive information in the regions identified as research priorities. Furthermore, we did not restrict the identification of data gaps to the very species-rich regions and in many regions we performed our analysis at a narrower spatial scale.

The poor data quality in some parts of arid Australia might be an artefact of our limited access to data. Access to floristic literature from Northern China and Japan was also difficult but our impression was that this actually reflected a lack of plant species richness data at the ecoregional scale in these regions. As far as most other data gaps identified here are concerned, we are rather sure that they reflect an absence of documented, reliable information on plant species richness at the ecoregion scale.

When examining data quality by biome, the flooded grasslands and flooded savannas are poorly known (Table 1). The relatively low species richness and the inhospitable working conditions make this biome unattractive for fieldwork, which might be the main reason for the low knowledge status. Data quality is only worse for mangroves. However, they have to be treated differently because their species richness is more determined by untypical species, which can be regarded as less important for conservation in this biome than the typical mangrove species, for which data availability is much better.

Our result that, at least within those biomes where significant results were obtained, species-rich ecoregions are better studied than species-poor ones (Table 2), can be explained by the assumption that species richness is a factor which attracts floristic work. However, many examples of species-rich ecoregions with very poor data, such as large parts of the Amazon and northern Colombia, illustrate that this correlation finds its limit when poor infrastructure or the poor regional, social and economic conditions restrict access to biodiverse areas. Some of the areas with high biodiversity but difficult accessibility might have a particularly high potential for conservation. Therefore, the further identification of such areas and subsequent biodiversity inventory is an urgent priority.

Human footprint

For most biomes, no significant correlation was found between species richness and human footprint. However, for some biomes, significant results were obtained and in these cases, the regression analysis shows the tendency that at the spatial scale studied here, the results differ between two groups of biomes.

The first group is of biomes such as deserts, tundra and taiga, where limits to plant growth can be observed due to constraints such as low water availability or short vegetation period. Here, a significant positive correlation between richness and human footprint was found (Table 2). Obviously, within these biomes, people tend to live in those areas where conditions for plant growth and thus for cultivation of crops are better, which, in such biomes, often correlates with areas of high species richness. In contrast, within the second group of biomes, where plants can grow almost anywhere, humans do not seem to settle depending on conditions for plant growth and hence no significant correlation was found.

Previous work, such as the studies by Balmford *et al.* (2001) for subsaharan Africa, and by Chown *et al.* (2003) for Southern Africa, also found a positive correlation between richness and measures of human impact. However, they performed their analyses on a narrower spatial scale and resolution and did not differentiate between biomes.

As far as the reverse perspective is concerned, i.e. the influence of human footprint on biodiversity, our data set only offers very limited possibilities for interpretation. This is mainly due to the structure of available data on the global scale, which we presume are closer to the natural state of biodiversity than to the current situation at the beginning of the twenty-first century. The data are certainly influenced by human interference of the previous centuries but, in large parts of the world, the diverse degradation processes of the past few decades are not adequately reflected by available floristic studies.

Methodological issues of richness assessment

So far, broad-scale biodiversity mapping projects based on species–area calculations have almost invariably used a uniform parameter value for the species–area curve (recent examples include Brooks *et al.*, 2002; Zurlini *et al.*, 2002; Thomas *et al.*, 2004). However, as demonstrated by previous work (e.g. Malyshev, 1975) and reinforced by the present study, the shape of the species–area curve varies considerably between biomes. This is unsurprising given that the mechanisms and conditions that determine the range sizes of species are different in, e.g. deserts vs. grasslands or tropical forests. We therefore suggest that future studies that rely upon species–area calculations do not use a uniform parameter value but instead use values derived separately for subregions such as biomes. Cowling *et al.* (1996) have demonstrated that, while species richness per standard area varies between the mediterranean-climate regions of the world, the z values are homogeneous. However, within other biomes a variation of z values can be expected, as demonstrated for the tropical and subtropical moist broadleaf forests (Table 1). The degree to which the calculation of parameter values can be made for subregions with significant results will ultimately depend on the size of the data set at hand.

When interpreting the richness values presented here, it should be noted that to some degree, larger ecoregions tend to have more species than smaller ones. However, as conservation planning within an ecoregion should aim to protect all species, or at least as many as possible, we mainly focused on the total species number per ecoregion rather than species numbers standardized by area.

The road ahead

Many promising areas of research are now possible with this new data set to enhance creation of a comprehensive global biodiversity strategy for the terrestrial realm. In particular, two types of analyses shall be mentioned here. First, it should become a research priority to test the correlation between vascular plant richness and plant endemism. Such tests can be conducted at regional and eventually global scales. Various studies have demonstrated a fairly good correlation between species richness and range-size rarity or endemism (Crisp *et al.*, 2001; Kier & Barthlott, 2001; Linder, 2001; Ricketts, 2001; Taplin & Lovett, 2003). One might assume that the general patterns would not change fundamentally in continental regions but might differ considerably or even be inversely related in some island ecoregions. However, this remains to be verified and even if the general patterns were similar, the important differences could point more accurately to gaps in our present global plant conservation network. A second type of analysis is to test for correlations between plant species richness and terrestrial vertebrate richness by ecoregion. A new data base featuring richness and endemism values for birds, mammals, reptiles and amphibians (WWF, 2005) will facilitate both regional and global comparisons in a fundamental test of species concordance.

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SUPPLEMENTARY MATERIAL

The following material is available from http://www.blackwellpublishing.com/products/journals/suppmat/JBI/JBI1272/JBI1272sm.htm

Appendix S1 Full bibliography (list of *c.* 300 literature references).

Appendix S2 Table with quantitative results for each ecoregion: working figure of species richness, minimum and maximum species richness, quality and suitability of underlying data.

Appendix S3 Ecoregions highest in species richness in each biome within each biogeographical realm.

REFERENCES

Balmford, A., Moore, J.L., Brooks, T., Burgess, N., Hansen, L.A., Williams, P. & Rahbek, C. (2001) Conservation conflicts across Africa. *Science*, **291,** 2616–2619.

Barthlott, W., Lauer, W. & Placke, A. (1996) Global distribution of species diversity in vascular plants: towards a world map of phytodiversity. *Erdkunde*, **50,** 317–327.

Barthlott, W., Biedinger, N., Braun, G., Feig, F., Kier, G. & Mutke, J. (1999) Terminological and methodological aspects of the mapping and analysis of global biodiversity. *Acta Botanica Fennica*, **162,** 103–110.

Barthlott, W., Mutke, J., Rafiqpoor, M.D., Kier, G. & Kreft, H. (in press) Global centres of vascular plant diversity. *Nova Acta Leopoldina*, **92**.

Brooks, T.M., Mittermeier, R.A., Mittermeier, C.G., da Fonseca, G.A.B., Rylands, A.B., Konstant, W.R., Flick, P., Pilgrim, J., Oldfield, S., Magin, G. & Hilton-Taylor, C. (2002) Habitat loss and extinction in the hotspots of biodiversity. *Conservation Biology*, **16,** 909–923.

Burgess, N.D., D'Amico, J.A., Dinerstein, E., Underwood, E., Olson, D.M., Newman, K. & Itoua, I. (2004) *The terrestrial ecoregions of Africa and Madagascar*. Island Press, Washington, DC.

Burgess, N., Küper, W., Mutke, J., Brown, J., Westaway, S., Turpie, S., Meshack, C., Taplin, J., McClean, C. & Lovett, J. (in press) Major gaps in the distribution of protected areas for threatened and narrow range Afrotropical plants. *Biodiversity and Conservation*.

Chown, S.L., van Rensburg, B.J., Gaston, K.J., Rodrigues, A.S. & van Jaarsveld, A.S. (2003) Energy, species richness and human population size: conservation implications at a national scale. *Ecological Applications*, **13,** 1233–1241.

Cowling, R.M., Rundel, P.W., Lamont, B.B., Arroyo, M.K. & Arianoutsou, M. (1996) Plant diversity in mediterranean-climate regions. *Trends in Ecology and Evolution*, **11,** 362–366.

Crisp, M.D., Laffan, S., Linder, H.P. & Monro, A. (2001) Endemism in the Australian flora. *Journal of Biogeography*, **28,** 183–198.

Davis, S.D., Droop, S.J.M., Gregerson, P., Henson, L., Leon, C.J., Villa-Lobos, J.L., Synge, H. & Zantovska, J. (1986) *Plants in danger: what do we know*? International Union for Conservation of Nature and Natural Resources (IUCN), Gland.

Davis, S.D., Heywood, V.H. & Hamilton, A.C. (1994) *Centres of plant diversity. A guide and strategy for their conservation. Vol. 1: Europe, Africa and the Middle East*. IUCN Publications Unit, Cambridge.

Davis, S.D., Heywood, V.H. & Hamilton, A.C. (1995) *Centres of plant diversity. A guide and strategy for their conservation. Vol. 2: Asia, Australia and the Pacific*. IUCN Publications Unit, Cambridge.

Davis, S.D., Heywood, V.H., Herrera-MacBryde, O., Villa-Lobos, J. & Hamilton, A.C. (1997) *Centres of plant diversity. A guide and strategy for their conservation. Vol. 3: The Americas*. IUCN Publications Unit, Cambridge.

De Klerk, H.M., Fjeldså, J., Blyth, S. & Burgess, N.D. (2004) Gaps in the protected area network for threatened Afrotropical birds. *Biological Conservation*, **117,** 529–537.

Dinerstein, E., Olson, D.M., Graham, D.J., Webster, A.L., Primm, S.A., Bookbinder, M.P. & Ledec, G. (1995) *A conservation assessment of the terrestrial ecoregions of Latin America and the Caribbean*. The World Bank, Washington, DC.

Faith, D.P. (2002) Quantifying biodiversity: a phylogenetic perspective. *Conservation Biology*, **16,** 248–252.

Fjeldså, J., Burgess, N.D., Blyth, S. & de Klerk, H.M. (2004) Where are the major gaps in the reserve network for Africa's mammals? *Oryx*, **38,** 17–25.

Frodin, D.G. (2001) Floras in retrospect and for the future. *Plant Talk*, **25,** 36–39.

Groombridge, B. & Jenkins, M.D. (2002) *World atlas of biodiversity*. University of California Press, Berkeley.

Hoekstra, J.M., Boucher, T.M., Ricketts, T.H. & Roberts, C. (2005) Confronting a biome crisis: global disparities of habitat loss and protection. *Ecology Letters*, **8,** 23–29.

Huston, M.A. (1994) *Biological diversity*. Cambridge University Press, Cambridge.

Kier, G. & Barthlott, W. (2001) Measuring and mapping endemism and species richness: a new mapping approach and its application on the flora of Africa. *Biodiversity and Conservation*, **10,** 1513–1529.

Krupnick, G.A. & Kress, W.J. (2003) Hotspots and ecoregions: a test of conservation priorities using taxonomic data. *Biodiversity and Conservation*, **12,** 2237–2253.

Küper, W., Sommer, J.H., Lovett, J.C., Mutke, J., Linder, H.P., Beentje, H.J., van Rompaey, R., Chatelain, C., Sosef, M. & Barthlott, W. (2004) Africa's hotspots of biodiversity redefined. *Annals of the Missouri Botanical Garden*, **91,** 525–535.

Linder, H.P. (2001) Plant diversity and endemism in sub-Saharan tropical Africa. *Journal of Biogeography*, **28,** 169–182.

Malyshev, L.I. (1975) The quantitative analysis of flora: spatial diversity, level of specific richness, and representativity of sampling areas (in Russian). *Botanicheskiy Zhurnal*, **60,** 1537–1550.

Mutke, J. & Barthlott, W. (2005) Patterns of vascular plant diversity at continental to global scales. *Biologiske Skrifter*, **55,** 521–537.

Myers, N., Mittermeier, R.A., Mittermeier, C.G., da Fonseca, G.A.B. & Kent, J. (2000) Biodiversity hotspots for conservation priorities. *Nature*, **403,** 853–858.

Olson, D.M. & Dinerstein, E. (1998) The Global 200: a representative approach to conserving the earth's most biologically valuable ecoregions. *Conservation Biology*, **12,** 502–515.

Olson, D.M., Dinerstein, E., Wikramanayake, E.D., Burgess, N.D., Powell, G.V.N., Underwood, E.C., D'Amico, J.A., Itoua, I., Strand, H., Morrison, J.C., Loucks, C.J., Allnutt, T.F., Ricketts, T.H., Kura, Y., Lamoreux, J.F., Wettengel, W.W., Hedao, P. & Kassem, K.R. (2001) Terrestrial ecoregions of the world: a new map of life on earth. *Bioscience*, **51,** 933–938.

Palmer, M.W. (1990) The estimation of species richness by extrapolation. *Ecology*, **71,** 1195–1198.

Ricketts, T.H. (2001) Aligning conservation goals: are patterns of species richness and endemism concordant at regional scales? *Animal Biodiversity and Conservation*, **24,** 91–99.

Ricketts, T.H., Dinerstein, E., Olson, D.M., Loucks, C.J., Eichbaum, W., DellaSala, D., Kavanagh, K., Hedao, P., Hurley, P.T., Carney, K.M., Abell, R. & Walters, S. (1999) *Terrestrial ecoregions of North America. A conservation assessment*. Island Press, Washington, DC.

Sanderson, E.W., Jaiteh, M., Levy, M.A., Redford, K.H., Wannebo, A.V. & Woolmer, G. (2002) The human footprint and the last of the wild. *Bioscience*, **52,** 891–904.

Taplin, J.R.D. & Lovett, J.C. (2003) Can we predict centres of plant species endemism and rarity from environmental variables in sub-Saharan Africa? *Botanical Journal of the Linnean Society*, **142,** 187–197.

Thomas, C.D., Cameron, A., Green, R.E., Bakkenes, M., Beaumont, L.J., Collingham, Y.C., Erasmus, B.F.N., Ferreira de Siqueira, M., Grainger, A., Hannah, L., Hughes, L., Huntley, B., van Jaarsveld, A.S., Midgley, G.F., Miles, L., Ortega-Huerta, M.A., Peterson, A.T., Phillips, O.L. & Williams, S.E. (2004) Extinction risk from climate change. *Nature*, **427,** 145–148.

Wikramanayake, E., Dinerstein, E., Loucks, C., Olson, D., Morrison, J., Lamoreux, J., McKnight, M. & Hedao, P. (2001) *Terrestrial ecoregions of the Indo-Pacific: a conservation assessment*. Island Press, Washington, DC.

Williams, P.H., Gibbons, D.W., Margules, C.R., Rebelo, A.G., Humphries, C.J. & Pressey, R.L. (1996) A comparison of richness hotspots, rarity hotspots and complementary areas for conserving diversity using British birds. *Conservation Biology*, **10,** 15–74.

WWF (2001) *Ecoregions GIS database*. http://www.worldwildlife.org/science/data/terreco.cfm. Downloaded 1 September 2001.

WWF (2005) *Wildfinder: global species database*. World Wildlife Fund US, Washington, DC.

Zurlini, G., Grossi, L. & Rossi, O. (2002) Spatial-accumulation pattern and extinction rates of Mediterranean flora as related to species confinement to habitats in preserves and larger areas. *Conservation Biology*, **16,** 948–963.

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Editor: Robert Whittaker

Appendix S1 Full bibliography.

Adler, W.; Oswald, K. & Fischer, R. (1994): Exkursionsflora von Österreich. Eugen Ulmer: Stuttgart, Wien.

Agnew, A.D.Q. & Mutangah, J.G. (1999): On the distribution of plant species in Kenya. In: Timberlake, J.R. & Kativu, S. (eds.): African plants: biodiversity, taxonomy and uses: proceedings of the 1997 AETFAT congress, Harare, Zimbabwe. Royal Botanic Gardens, Kew: Kew, p. 207-219.

Aké Assi, L. (1998): Sur la flore, les herbiers et les Jardins Botaniques au Sahel. In: Bâ, A.T.; Madsen, J.E. & Sambou, B. (eds.): Végétation e biodiversité au Sahel. Proceedings. AAU Report. Aarhus University Press: Aarhus, p. 1-13.

Alcantara Ayala, O. & Luna Vega, I. (1997): Floristica y analisis biogeografico del bosque mesofilo de montana de Tenango de Doria, Hidalgo, Mexico. (Floristics and biogeographical analysis of the cloud forest of Tenango de Doria, Hidalgo, Mexico.).- Anales del Instituto de Biología, Universidad Nacional Autónoma de México, Serie Botánica 68: 57-106.

Allorge, P. (1941): Avant-propos: Landes et pays basque.- Bulletin de la Societe Botanique de France 88: 2-4, 340-341.

Armesto, J.J. & Vidiella, P.E. (1993): Plant life-forms and biogeographic relations of the flora of Lagunillas (30°S) in the fog-free Pacific Coastal Desert.- Annals of the Missouri Botanical Garden 80: 499-511.

Arrigoni, P.V. (1990): Flora e vegetazione della Marche lucchese di Viareggio (Toscana).- Webbia 44: 1-62.

Arroyo, M.T.K.; Marticorena, C.; Miranda, P.; Matthei, O.; Landero, A. & Squeo, F. (1989): Contribution to the high elevation flora of the Chilean Patagonia: A checklist of species on montains on an East-West transect in the Sierra de los Baguales, Latitude 50° S.- Gayana 46: 119-149.

Arroyo, M.T.K.; Zedler, P.H. & Fox, M.D. (eds.) (1995): Ecology and Biogeography of Mediterranean Ecosystems in Chile, California, and Australia. Springer: New York.

Ashton, P.S. (1989): Sundaland. In: Campbell, D.G. & Hammond, D.H. (eds.): Floristic inventory of tropical countries. The New York Botanical Garden: New York, p. 91-102.

Assadi, M. (1988): Plants of Arasbaran protected area, NW Iran (Part 2).- Iranian Journal of Botany 4: 1-59.

Astle, W.L.; Phiri, P.S.M. & Prince, S.D. (1997): Annotated checklist of the flowering plants and ferns of the South Luangwa National Park, Zambia.- Kirkia 16: 109-160.

Awasthi, A. (1995): Plant geography and Flora of Rajasthan (with an Introduction to the Plant Geography of India). Deep & Deep Publications: New Delhi.

Ba, A.T. & Noba, K. (1998): Flore et biodiversite au Senegal.- AAU reports 39: 27-42.

Badman, F.J.; Arnold, B.K. & Bell, S.L. (eds.) (1991): A natural history of the Lake Eyre region. NPWS Northern Consultative Committee: Port Augusta.

Baldini, R.M. (1991): Flora delle isole satelliti del Monte Argentario (Archipelago Toscano).- Webbia 46: 107-123.

Ballero, M. & Angiolino, C. (1991): La flora del Massiccio del Marganai (Sardegna sud-occidentale) (The flora of the Massif of Marganai, south western Sardinia).- Webbia 46: 81-106.

Ballero, M. (1988): La flora presente lungo i corsi d'acqua del bacino idrografico del Rio Cannas (Sardegna sud-orientale).- Webbia 42: 269-284.

Baozang, D. (1988): Henan-zhiwuzhi Vol. 2. Henan Renming Chubanshe: Kaifeng.

Barros, F. and others (1991): Flora fanerogamica da Ilha do Cardoso: vol.1. Caracterizacao geral da vegetacao e listagem das especies ocorrentes. Instituto de Botanica: Sao Paulo.

Batianoff, G.N. & Dillewaard, H.A. (1988): Port Curtis District flora and early botanists. Society for Growing Australian Plants (Queensland Region): Queensland.

Beadle, N.C.W. (1981): The vegetation of Australia. Fischer Verlag: Stuttgart.

Beaman, J.H.; Beaman, R.S. & Anderson, C. (1998): Botanical inventory of Mount Kinabalu: a progress report. In: Dransfield, J.; Coode, M.E.J. & Simpson, D.A. (eds.): Plant Diversity in Malesia III. Proceedings of the third international Flora Malesiana Symposium 1995. Royal Botanic Gardens, Kew: Kew, p. 41-50.

Bedalov, M. (1989): Prilog Flori Otoka Sollte.- Acta botanica Croatica 48: 121-127.

Bélem Ouédraogo, M. & Guinko, S. (1998): La biodiversité des galeries forestières du Burkina Faso: cas de la réserve de la Biosphère de la Mare Aux Hippopotames. In: Bâ, A.T.; Madsen, J.E. & Sambou, B. (eds.): Végétation e biodiversité au Sahel. Proceedings. AAU Report. Aarhus University Press: Aarhus, Denmark, p. 75-86.

Bloch, D. (1980): Farose Flowers. Foroya Fródskaparfelag: Tórshavn.

Bocchieri, E. (1988): L'isola Asinari (Sardegna nord-occidentale) e la sua flora.- Webbia 42: 227-268.

Bocchieri, E. (1989): The flora of the island of Campionna (Sardinia, Italy).- Willdenowia 18: 361-366.

Bocchieri, E. (1995): Vegetal landscape and flora of Mortoio Island (northeastern Sardinia).- Ecologia mediterranea 21: 83-97.

Boggan, J.; Funk, V.; Kellhoff, C.; Hoff, M.; Cremers, G. & Feuillet, C. (1997): Checklist of the plants of the Guianas. Smithsonian Institution: Georgetown, Guyana: Centre for the study of Biological Diversity.

Borhidi, A. (1991): Phytogeography and vegetation ecology of Cuba. Akadémiai Kiadó: Budapest.

Bouchard, A.; Hay, S.; Bergeron, Y. & Leduc, A. (1991): The vascular flora of Gros Morne National Park, Newfoundland: a habitat classification approach based on floristic, biogeographical and life-form Data. In: Nimis, P.L. & Crovello, T.J. (eds.): Quantitative approaches to phytogeography. Kluwer Academic Publishers: Netherlands, p. 123-125, 138-142.

Bouxin, G. (1974): Etude phytogeographique des plantes vasculaires du marais Kamiranzovu (forets de Rugege, Rwanda).- Bulletin du Jardin Botanique National de Belgique 44: 141-159.

Bowers, J.E. & McLaughlin, S.P. (1995): Flora of the Huachuca Mountains, Cochise County, Arizona. In: DeBano, L.F.; Folliott, P.F.; Ortega-Rubio, A.; Gottfried, G.J.; Hamre, R.H. & Edminster, C.B. (eds.): Biodiversity and Management of the Madrean

Archipelago: The Sky Islands of Southwestern United States and Northwestern Mexico. USDA Forest Service: Fort Collins, p. 135-143.

Bowman, D.M.J.S.; Wilson, B.A. & Wilson, P.L. (1988): Floristic reconnaissance of the northern portion of the Gregory National Park, Northern Territory, Australia.- Journal of the Royal Society of Western Australia 70: 57-67.

Brako, L.& Zarucchi, J.L. (1993): Catalogue of the Flowering Plants and Gymnosperms of Peru (Monographs in Systematic Botany from the Missouri Botanical Garden 45). Missouri Botanical Garden: Missouri.

Brilli-Cattarini, A.J.B. (1976): Aspetti floristici delle Marche. (Aspects of flora in the Marche).- Giornale botanico italiano 110: 401 - 417.

Brodie, J. & Sheehy Skeffington, M. (1990): Inishbofin: a re-survey of the flora.- The Irish Naturalists´ Journal 23: 293-298.

Brullo, S.; Minissale, P. & Spampinato, G. (1995): Considerazioni fitogeografiche sulla flora della Sicilia.- Ecologia mediterranea 21: 99-117.

Bulic, Z. (1989): Prilog flori kanjonske doline rijeke Tare. (A contribution to the flora of the Tara river canyon's valley.).- Glasnik Republickog Zavoda za Zastitu Prirode i Prirodnjackog Muzeja u Titogradu 22: 113-138.

Cabrera, A. (1953): Manual de la flora de los alrededores de Buenos Aires. Editorial Acme S.A.: Buenos Aires.

Cagnoni, M.; Faggi, A.M. & Ribichich, A. (1996): La vegetación de la Reserva "El Destino" (Partido de Magdalena, Provincia de Buenos Aires).- Parodiana 9: 25-44.

Cano, A. & Valencia, N. (1992): Composicion floristica de los bosques nublados secos de la vertiente occidental de los Andes Peruanos.- Memorias del Museo de Historia Natural 21: 171-180.

Caputo, G.; La Valva, V. & Ricciardia, M. (1987): Nuove aggiunte alla flora del Monte Alburno (Appenino Campano-Lucano).- Webbia 41: 273-287.

Carazo-Motijano, M. & Fernández-López, C. (1994): Flora de Marruecos y Andalucía - Catálogo Bibliográfico de las Plantas Vasculares. A Demandra: Jaén (Espana): Herbario.

Carlson, T. & Clemendson, C.-J. (1989): Bratön - en ö med värdefull lundflora i Södermanland.- Svensk botanisk tidskrift 83: 283-295.

Carlson, T.; Clemendson, C.-J. & Östholm, B. (1991): Vegetation och flora pa Tosterön, Aspön och Oknön i norra Södermanland.- Svensk botanisk tidskrift 85: 111-163.

Ceron, C.E. & Toasa, G. (1994): Diversidad de la vegetación en el volcan Ruminahui, Pichincha - Ecuador.- Revista Geográfica 34: 21-41.

Chas, E. (1994): Atlas de la flore des Hautes-Alpes. Conservatoire botanique national de Gap-Charance, Conservatoire des espaces naturels de Provence et des Alpes du Sud: Parc National des Ecrins.

Chassagne, M. (1956): Inventaire Analytique de la Flore d' Auvergne et contrées limitrophes des départements voisins, tome I. Editorial Paul Lechevalier: Paris.

Chaudhary, R.P. (1998): Biodiversity in Nepal. Status and Conservation. Craftsman Press: Bangkok, Thailand.

Chen, G.; Gu, Z.; Li, H. & Zhang, X. (1996): Floristic features and diversity of seed plants in Dehang region, Hunan. In: Zhang, A.L.; Wu, S.G. and others (eds.): Floristic characteristics and diversity of East Asian plants: proceedings of the first international symposium of floristic characteristics and diversity of East Asian plants. China Higher Education Press: Beijing, p. 157-162.

Chen, W. (1998): An analysis of the floral composition in east Guangdong. In: Zhang, A. & Wu, S. (eds.): Floristic characteristics and diversity of east asian plants. Springer Verlag: Berlin & Heidelberg, p. 154-156.

Chengjin, Q.; Yutan, X. & Tieru, C. (1992): The vegetation of the Nanshan Mountains of Hunan Province and its rational utilization.- Braun-Blanquetia 8: 50-53.

Choudhury, B.P. & Patnaik, S.N. (1982): Flora of Bhubaneswar and adjoining region.- Journal of economic and taxonomic botany 3: 549-555.

Chowdhury, S.; Kataki, S.K. & Barua, I.C. (1994): Floristic analysis of angiosperms of Kamrup district (sensu lato), Assam.- Journal of economic and taxonomic botany 18: 697-703.

Christodoulakis, D.; Georgiadis, T.; Economidou, E.; Latrou, G. & Tzanoudakis, D. (1990): Flora und Vegetation der Dionysaden-Inseln (Südägäis, Griechenland).- Willdenowia 19: 425-443.

Clarke, H.D.; Funk, V.A. & Hollowell, T. (2001): Using Checklists and Collections Data to Investigate Plant Diversity: I: A Comparative Checklist of the Plant Diversity of the Iwokrama Forest, Guyana. Botanical Research Institute of Texas: Fort Worth.

Cohn, J.S. (1995): The vegetation of Nombinnie and Round Hill Nature Reserves, central-western New South Wales.- Cunninghamia 4: 81-101.

Collenette, S. (1998): A Checklist of Botanical Species in Saudi Arabia. International Asclepiad Society: Ashford, Kent, UK.

Conti, F. (1998): Flora D'Abruzzo.- Bocconea 10: 1-275.

Cowling, R.M. & Hilton-Taylor, C. (1994): Patterns of plant diversity and endemism in southern Africa: an overview. In: Huntley, B.J. (ed.): Botanical Diversity in Southern Africa. National Botanical Institute: Pretoria, p. 31-52.

Craig, G.F. (1995): Native plants of the Ravensthorpe region. Ravensthorpe Wildflower Show Inc: Ravensthorpe, WA.

Cralew, M.J.; Harvey, P.H. & Purvis, A. (1996): Comparative ecology of the native and alien floras of the British Isles.- Philosophical transactions of the Royal Society of London / B 351: 1251-1259.

Cunha de Mendonca, R. et al. (1998): Flora vascular do Cerrado. In: Sano, S.M. & Almeida, S.P. (eds.): Cerrado: ambiente e flora. Embrapa - CPAC: Planaltina, p. 289-325.

Cunningham, G.M. & Milthorpe, P.L. (1981): The vascular plants of five enclosure sites in western New South Wales.- Cunninghamia 1: 23-34.

Danin, A. (1983): Desert Vegetation of Israel and Sinai. Cana Puplishing House: Jerusalem.

Dar, G.H. & Kachroo, P. (1992): Floristic diversity in Sind Valley (Kashmir).- Journal of economic and taxonomic botany 16: 647-652.

Dashorst, G.R.M. & Jessop, J.P. (1990): Plants of the Adelaide plains and hills. Kangaroo Press Pty Ltd.: Kenthurst, N.S.W.

Davina, J.R.; Rodríguez, M.E.; Honfi, A.I.; Seijo, G.J.; Insaurralde, I. & Guillen, R. (1999): Floristic studies of the Moconá Park, Misiones, Argentina.- Candollea 54: 231-249.

Davis, S.D.; Droop, S.J.M.; Gregerson, P.; Henson, L.; Leon, C.J.; Villa-Lobos, J.L.; Synge, H. & Zantovska, J. (1986): Plants in Danger: What do we know? International Union for Conservation of Nature and Natural Resources (IUCN): Gland.

Davis, S.D.; Heywood, V.H. & Hamilton, A.C. (eds.) (1994): Centres of Plant Diversity. A guide and strategy for their conservation. Vol. 1: Europe, Africa and the Middle East. IUCN Publications Unit: Cambridge.

Davis, S.D.; Heywood, V.H. & Hamilton, A.C. (eds.) (1995): Centres of Plant Diversity. A guide and strategy for their conservation. Vol. 2: Asia, Australia and the Pacific. IUCN Publications Unit: Cambridge.

Davis, S.D.; Heywood, V.H.; Herrera-MacBryde, O.; Villa-Lobos, J.L. & Hamilton, A.C. (eds.) (1997): Centres of Plant Diversity. A guide and strategy for their conservation. Vol. 3: The Americas. IUCN Publications Unit: Cambridge.

de Bolós, O.; Vigo, J.; Masalles, R.M. & Ninot, J.M. (1990): Flora manual dels Paisos Catalans. Pòrtic: Barcelona.

de Vogel, E.F. (1989): Sulawesi (Celebes). In: Campbell, D.G. & Hammond, H.D. (eds.): Floristic inventory of tropical countries: the status of plant systematics, collections and veg. plus recommendations for the future. The New York Botanical Garden: New York, p. 108-112.

Delascio Chitty, F. & Gonzales, A. (1988): Florula del monumento natural Tetas de Maria Guevara. Jardín Botánico de Caracas, Herbario Nacional de Venezuela: Litopar, C.A. Caracas.

Deng, C. (1996): A floristic study on the Seed plants of Southwest Guizhou. In: Zhang, A.L., Wu, S.G. et al. (eds.): Floristic characteristics and diversity of East Asian plants: proceedings of the first international symposium of floristic characteristics and diversity of East Asian plants. China Higher Education Press: Beijing, p. 228-240.

Devesa Alcaraz, J.A. (1995): Vegetación y Flora de Extremadura. Universitas: Badajoz.

Dimopoulos, P. & Georgiadis, T. (1992): Floristic and phytogeographical analysis of Mount Killini (NE Peloponnisos, Greece.).- Phyton 32: 283-305.

Dixit, S.K.; Verma, B.K. & Roy, G.P. (1984): A floristic survey of Fatehpur district, U.P.: I (excluding Poaceae).- Journal of economic and taxonomic botany 5: 75-106.

do Amaral, I.L.; Adis, J. & Prance, G.T. (1997): On the vegetation of a seasonal mixedwater inundation forest near Manaus, Brazilian Amazonia.- Amazoniana-Limnologia et Oecologia Regionalis Systemae Fluminis Amazonas 14: 335-347.

Druce, A.P. (1984): Distribution of indigenous higher plants in North Island and Northern South Island, New Zealand. Unpublished report. Botany Division, DSIR: Wellington.

Dudley, C.O. (1994): The flora of Liwonde National Park, Malawi. In: Seyani, J.H. & Chikuni, A.C. (eds.): Proc. XIII. Plenary Meeting AETFAT. National Herbarium and Botanic Gardens of Malawi, Zomba: Malawi, Zomba, p. 1485-1509.

Ekman, S. & Olsson, K.-A. (1988): Floran i östra Villand.- Svensk botanisk tidskrift 82: 65-117.

Ellenberg, H. (1975): Vegetationsstufen in perhumiden bis perariden Bereichen der tropischen Anden.- Phytocoenologia 2 (3/4): 368-387.

Elliot, R. (1984): A Field Guide to the Grampians Flora. Algona: Northcote.

Ellis, R.G. (1983): Flowering plants of Wales. National Museum of Wales: Cardiff.

Engelskjon, T. & Skifte, O. (1995): The vascular plants of Troms, North Norway. Revised distribution maps and altitude limits after Benum: the flora of Troms flyke. Universitetet i Tromso, Institutt for museumsvirksomhet: Tromso.

Everist, S.L.; Sharpe, P.R. & Hockings, F.D. (1976): Plant list - Isla Gorge National Park.- Queensland naturalist 21: 107 - 110.

Fabian, A. & Germishuizen, G. (1997): Wild flowers of northern South Africa. Fernwood Press: Cape Town.

Fan, H. & Liu, N. (1996): Studies on the Angiospermae flora of Yunkai Mountain: the analysis of families. In: Zhang, A.L.; Wu, S.G. and others (eds.): Floristic characteristics and diversity of East Asian plants: proceedings of the first international symposium of floristic characteristics and diversity of East Asian plants. China Higher Education Press: Beijing, p. 260-266.

Fenghwai, C. (1987): Guangdong-zhiwuzhi (Flora of Guangdong)Vol. 1. Guangdong Science and Technology Press: Guangzhou.

Fernández López, C. et al. (1991): Flora de Andalucia - Catalogo Bibliografico de las Plantas Vasculares. Facultad de Ciencias Experimentales, Jaén: Jaén.

Ferrari, C.; Bonafede, F. & Alessandrini, A. (1993): Rare plants of the Eimilia-Romagna region (Northern Italy): A data bank and computer-mapped atlas for conservation purposes.- Biological Conservation 64: 11-18.

Fink, H.G.; Vibrans, H. & Vollmer, I. (1992): Synopse der Roten Listen Gefäßpflanzen.- Schriftenreihe für Vegetationskunde 22: 24-27, 30-31, 212-217.

Fontana, J.L. (1998): Análisis sistemático-ecológico de la flora del sur de Misiones (Argentina).- Candollea 53: 211-301.

Forbes, S.J. & Kenneally, K.F. (1986): A botanical survey of Bungle Bungle and Osmond Range, south-eastern Kimberley, Western Australia.- Western Australian naturalist 16: 93-169.

Forero, E. & Gentry, A. (1989): Lista Anotada De Las Plantas Del Departamento Del Choco, Colombia. Instituto de Ciencias Naturales, Museo de Historia Natural, Universidad Nacional de Colombia, Biblioteca José Jerónimo Triana No. 10: Bogotá, D.E.

Friis, I. (1994): Some general features of the afromontane and afrotemperate floras of the Sudan, Ethiopia and Somalia. In: Seyani, J.H. & Chikuni, A.C. (eds.): Proc. XIIIth Plenary Meeting AETFAT, Malawi, 2. National Herbarium and Botanic Gardens of Malawi, Zomba: Malawi, p. 953-968.

Frodin, D.G. (1984): Guide to the standard floras of the world. Cambridge University Press: Cambridge.

Frodin, D.G. (2001): Guide to standard floras of the world. Cambridge University Press: Cambridge.

Gautier, G. (1898): Catalogue raisonné de la Flore des Pyrénées-Orientales. Soc. Agric. Scient. & Litt. Pyrénées-Orientales: Perpignan.

Gentry, A.H. (1982): Neotropical floristic diversity: Phytogeographical connections between central and south america, pleistocene climatic fluctuations, or an accident of the Andean orogeny?- Annals of the Missouri Botanical Garden 69: 557-593.

Gentry, A.H. (1992): Tropical forest biodiversity: distributional patterns and their conservational significance.- Oikos 63: 19-28.

Good, R. (1974): The geography of the flowering plants. Longmans: London.

Gowda, B., Gurudeva, M.R. & Vijaya Kumar, G.C. (1986): Flora of Tumkur District, Karnataka: part 1. Kunigal taluk.- Journal of economic and taxonomic botany 8: 321-327.

Greenway, P.J. and others. (1988): The vegetation of Mafia Island, Tanzania.- Kirkia 13: 197-238.

Groombridge, B. (ed.) (1992): Global Biodiversity. Status of the earth's living resources. Chapman & Hall: London.

Guende, G. (1993): Flore du Luberon. EDISUD: Aix-en-Provence.

Guerrero Nuno, J.J. & Lopez Coronado, G.A. (1997): La vegetation y la flora de la Sierra de Quila - Jalisco, Mexico. Universidad de Guadalajara: Guadalajara, Mexico.

Gupta, R.K. (1986): The Thar desert. In: Evenari, M.; Noy-Meir, I. & Goodall, D.W. (eds.): Ecosystems of the World 12B: Hot Deserts and Arid Shrublands. Elsevier: Amsterdam, p. 55-99.

Gustafsson, L. & Ahlén, I. (eds.) (1996): Geography of Plants and Animals. National Atlas of Sweden. Sveriges Nationalatlas Foerlag: Stockholm.

Hall-Martin, A.J. & Drummond, R.B. (1980): Annotated list of plants collected in Lengwe National Park, Malawi.- Kirkia 12: 151 - 181.

Hamilton, A.C. (1994): Regional overview: Atlantic Ocean Islands. In: Davis, S.D.; Heywood, V.H. & Hamilton, A.C. (eds.): Centres of Plant Diversity. A guide and strategy for their conservation. Vol. 1: Europe, Africa and the Middle East. IUCN Publications Unit: Cambridge, p. 85-86.

Hancock, I.R. & Henderson, C.P. (1988): Flora of the Solomon Islands.- Research bulletin 7: 1-203.

Hanlidou, E. & Kokkini, S. (1997): On the flora of the Vikos-Aoos National Park (N.W. Greece).- Willdenowia 27: 81-100.

Hao, R.M. & Yao, G. (1998): Analysis of the floristic elements of seed plants in the northwest of Jiangxi.- Acta Botanica Yunnanica 20: 253-264.

Hartshorn, G.S. & Hammel, B.E. (1994): Vegetation types and floristic patterns. In: McDade, L.A.; Bawa, K.S.; Hespenheide, H.A. & Hartshorn, G.S. (eds.): La Selva - Ecology and Natural History of a Neotropical Rain Forest. University of Chicago Press: Chicago, p. 73-89.

Hecimovic, M. & Hecimovic, S. (1989): Flora Otoka Dakse.- Acta botanica Croatica 48: 129-139.

Henderson, R.J.F. (1976): Plants of Blackdown Tableland.- Queensland naturalist 21: 125 - 132.

Herbst, S.N. & Roberts, B.R. (1974): The alpine vegetation of the Lesotho Drakensberg: a study in quantitative floristics at Oxbow.- Journal of South African botany 40: 257-267.

Howard-Williams, C. (1977): A check-list of the vascular plants of Lake Chilwa, Malawi, with special reference to the influence of environmental factors on the distribution of taxa.- Kirkia 10: 563 - 579.

Huber, O. (ed.) (1986): La Selva nublada de Rancho Grande Parque Nacional "Henri Pittier": El Ambiente Físico, Ecología Vegetal y Anatomía Vegetal. Fondo ed Acta Científica Venezolana y Seguros Anauco: Caracas.

Huber, O.; Duno, R.; Riina, R.; Stauffer, F.; Pappaterra, L.; Jiménez, A.; Llamozas, S. & Orsini, G. (1998): Estado actual del conocimiento de la flora en Venezuela. Ministerio del Ambiente y de los Recursos Naturales Renovables: Caracas.

Hulina, N. (1989): Prikaz i analiza flore u podrucju Turopolja. (A survey and analysis of the flora in the Turopolje area.).- Acta botanica Croatica 48: 141-160.

Hultén, E. (1968): Flora of Alaska and neighbouring Territories. Stanford Univ. Press: Stanford California.

Ibarra-Manríquez, G.; Ricker, M.; Angeles, G.; Sinaca Colín, S. & Sinaca Colín, A. (1997): Useful plants of the Los Tuxlas Rain Forest (Veracruz, Mexico): Considerations of their market potential.- Economic Botany 51: 362-376.

Ibisch, P.L. (1996): Neotropische Epiphytendiversität - das Beispiel Bolivien. Martina Galunder Verlag: Wiehl.

Ibisch, P.L. (1998): Bolivia is a megadiversity country and a developing country. In: Barthlott, W. & Winiger, M. (eds.): Biodiversity - a challenge for development research and policy. Springer: Heidelberg, p. 213-241.

Ibisch, P.L.; Rojas, P.; de la Barra, N.; Fernández, E.; Mercado, M.; Ovando, L. & Vargas, G. (1996): Un "lugar de encuentro": Flora de la zona arqueológica "El Fuerte", Samaipata, (Prov. Florida, Dpto. Santa Cruz, Bolivia).- Ecologia en Bolivia 28: 1-28.

Iversen, S.T. (1991): The Usambara mountains, NE Tanzania: phytogeography of the vascular plant flora.- Symbolae botanicae Upsalienses 29: 234.

Iverson, L.R. & Prasad, A. (1998): Estimating regional plant biodiversity with GIS modelling.- Diversity and distributions 4: 49-61.

Jaeger, P. (1983): Le recensement des plantes vasculaires et les originalites du peuplement vegetal des monts Loma en Sierra Leone (Afrique Occidentale). (A floristic inventory of the Loma mountains in Sierra Leone.).- Bothalia 14: 539-542.

Jäger, E.J. (1993): Plant Geography. In: Behnke, H.D.; Lüttge, U.; Esser, K.; Kadeirat, J.W. & Runge, M. (eds.): Progress in botany. Springer: Berlin, p. 428 - 447.

Jahn, R. & P. Schönfelder (1995): Exkursionsflora für Kreta. Ulmer: Stuttgart.

Jain, S.P.; Singh, J.S. & Verma, D.M. (1982): Flora of North-east Haryana (India).- Journal of economic and taxonomic botany 3: 151-176.

Janssen, A. (1988): Die Flora der Savannen von Humaitá, AM, Brasilien.- Mitteilungen der Botanischen Staatssammlung München 27: 87-95.

Janzen, D.H. & Liesner, R. (1980): Annotated check-list of plants of lowland Guanacaste Province, Costa Rica, exclusive of grasses and non-vascular cryptogams.- Brenesia 18: 15 - 90.

Jessop, J.P. (ed.) (1981): Flora of Central Australia. Reed Books Pty Ltd: Sydney.

Jorgensen, P.M. & León-Yánez, S. (eds.) (1999): Catalogue of the vascular plants of Ecuador. Missouri Botanical Garden Press: St. Louis.

Jörgensen, P.M. & Ulloa Ulloa, C. (1994): Seed Plants of the High Andes of Ecuador - a checklist.- AAU reports 34: 1-443.

Karagiannakidou, V. & Kokkini, S. (1987): The flora of Mount Menikion in North East Greece.- Phyton 27: 267-283.

Keighery, G. (1999): A checklist of the vascular flora of the Porongurup National Park, Western Australia.- Western Australian naturalist 22: 137-158.

Kelly, D.L.; Tanner, E.V.J.; Nic Lughadha, E.M. & Kapos, V. (1994): Floristics and biogeography of a rain forest in the Venezuelan Andes.- Journal of Biogeography 21: 421-440.

Kendrick, K. (1989): India. In: Campbell, D.G. & Hammond, D.H. (eds.): Floristic inventory of tropical countries. The New York Botanical Garden: New York, p. 133-140.

Killeen, T. & Nee, M. (1991): Catálogo de las plantas sabaneras de Concepcíon, Santa Cruz, Bolivia.- Ecologia en Bolivia 17: 53-71.

Knapp, R. (1973): Die Vegetation von Afrika. G. Fischer: Stuttgart.

La Ferla, B., Taplin, J., Ockwell, D. & Lovett, J.C. (2002): Continental scale patterns of biodiversity: Can higher taxa accurately predict African plant distributions?- Botanical Journal of the Linnean Society 138: 225-235.

Lakshminarayana, K.; Venkanna, P. & Pullaiah, T. (1997): Flora of Krishana District Andhra Pradesh, India. M D Publications PVT LTD: New Delhi.

Lanfranco, E. (1995): The Maltese flora and its conservation.- Ecologia mediterranea 21: 165-168.

Lassagne, H. (1996): L'inventaire floristique du Cantal.- Le Monde des Plantes 457: 14-16.

Le Houérou, H.N. (1986): The desert and arid zones of northern Africa. In: Evenari, M.; Noy-Meir, I. & Goodall, W. (eds.): Ecosystems of the world 12B: Hot deserts and arid shrublands. Elsevier: Amsterdam, p. 101-147.

Lebrun, J. (1960): Sur la richesse de la flore de divers territoires africains.- Bulletin de séances de l'Académie Royale des Sciences d'Outre-Mer 6: 669-690.

Lebrun, J.-P. & Gaston, A. (1986): Troisieme supplement au Catalogue des plantes vasculaires du Tchad méridional (Third supplement to the catalogue of vascular plants of southern Chad.).- Bulletin de la Societe Botanique de France / Lettres botaniques 133: 387-392.

Lebrun, J.-P. (1976): Richesses spécifiques de la flore vasculaire des divers pays ou régions d'Afrique.- Candollea 31: 11-15.

León, B.; Young, K.R. & Brako, L. (1992): Analisis de la composicion floristica del bosque montano oriental del Peru.- Memorias del Museo de Historia Natural 21: 141-154.

Li, H.; Guo, H.J. & Dao, Z.L. (eds.) (2000): Flora of Gaoligong Mountains. Science Press: Beijing.

Li, S. (1988): Liaoning-zhiwuzhi (Flora Liaoningica) Vol. 1. Liaoning Kexue Jishu Chubanshe: Shenyang.

Li, X.W. (1995): A floristic study on the seed plants from the region of Yunnan Plateau.- Acta Botanica Yunnanica 17: 1-14.

Li, X.W. (1995): A floristic study on the seed plants from tropical Yunnan.- Acta Botanica Yunnanica 17: 115-128.

Lima da Silva, A.S.; Lisboa, P.L.B. & Maciel, U.N. (1992): Diversidade Florística e Estructura em Floresta densa da Bacia do Rio Juruá-Am.- Boletim do Museu Paraense Emilio Goeldi / Serie botanica 8: 203-258.

Liu, P. & Guo, S. (1998): Studies on the flora of Dabieshan and interrelationship between the southern and northern slopes. In: Zhang, A. & Wu, S. (eds.): Floristic characteristics and diversity of east asian plants. Springer Verlag: Berlin, Heidelberg, p. 169-174.

Lochman, J. & Lochman, M. (1998): Wildflowers of Western Australia. New Holland: Sydney.

Lock, J.M. (1977): The vegetation of Rwenzori National Park, Uganda.- Botanischer Jahresbericht 98: 372 - 448.

Londono-Vega, A. C. & Alvarez-Dávila, E. (1997): Composición florística de dos bosques (Tierra firme y varzea) en la region de Araracuara, Amazonía Colombíana.- Caldasia 19: 431-463.

Lorence, D.H. & García Mendoza, A. (1989): Oaxaca, Mexico. In: Campbell, D.G. & Hammond, H.D. (eds.): Floristic inventory of tropical countries. The New York Botanical Garden: New York, p. 253-269.

Lovett, J.C. (1993): Eastern Arc moist forest flora. In: Lovett, J.C. & Wasser, S.K. (eds.): Biogeography and ecology of the rain forests of eastern Africa. Cambridge University Press: Cambridge, p. 33-55.

Lovett, J.C., Gereau, R.E. & Sidwell, K.J. (1994): Vegetation and phytogeography of the Kitulo Plateau, southern Tanzania. In: Seyani, J.H. & Chikuni, A.C. (eds.): Proceedings of the 13th plenary meeting of AETFAT, Zomba, Malawi, 2-11 April, 1991: volume 2. Plants for the people. National Herbarium and Botanic Gardens of Malawi: Zomba, p. 1025-1041.

Lovric, A.Z. (1993): Dry Coastal Ecosystems of Croatia and Yugoslavia. In: van der Maarel, E. (ed.): Ecosystems of the World 2A: Dry Coastal Ecosystems. Elsevier: Amsterdam, p. 391-420.

Lozano-C., G. (1996): Géneros de Cormofitos endémicos de Colombia. In: Pinto, P. (ed.): Notas sobre Biodiversidad. Editora Guadalupe: Santa Fe de Bogota, p. 65-.

Luteyn, J.L.; Cleef, A.M. & Rangel-Ch., O. (1992): Plant diversity in páramo: Towards a checklist of páramo plants and a generic flora. In: Balslev, H. (ed.): Páramo: an Andean ecosystem under human influence. Acad. Press: London, p. 71-84.

Ma, Y.; Liu, Z.; Zhao, Y.; Cao, R. & Zhu, Z. (1998): The characteristics of steppe region flora in Inner Mongolia and its relationship with east asian flora. In: Zhang, A. & Wu, S. (eds.): Floristic characteristics and diversity of east asian plants. Springer Verlag Berlin Heidelberg: Berlin, Heidelberg, p. 175-187.

Maggs, G.L.; Kolberg, H.H. & Hines, C.J.H. (1994): Botanical diversity in Namibia - an overview. In: Huntley, B.J. (ed.): Botanical Diversity in Southern Africa. National Botanical Institute: Pretoria, p. 93-104.

Major, J. (1988): Endemism: a botanical perspective. In: Myers, A.A. & Giller, P.S. (eds.): Analytical Biogeography. Chapman & Hall: London, p. 311-342.

Malyshev, L.; Nimis, L.P. & Bolognini, G. (1994): Essays on the modelling of spatial floristic diversity in Europe: British Isles, West Germany, and East Europe.- Flora 189: 79-88.

Malyshev, L.I. (1994): Floristic richness of the USSR. In: Yurtsev, B.A. (ed.): Aktyalnye problemy sravnitelnogo izuchenia flor. Nauka: St. Petersburg, p. 34-87.

Malyshev, L.I.; Balkov, K.S. & Doronkin, V.M. (1999): Spatial diversity in the Siberian flora.- Flora 194: 357-368.

Manilal, K.S. (1988): Flora of Silent Valley, Tropical rainforest of India. The Mathrubhumi (MM) Press: Calicut.

Marchant, N.G. (1973): Species diversity in the southwestern flora.- Journal of the Royal Society of Western Australia 56: 23-30.

Marhold, K. & Hindák, F. (1998): Ferns and flowering plants. In: Marhold, K. & Hindák, F. (eds.): Checklist of non-vascular and vascular plants of Slovakia. VEDA; vydavatelstvo Slovenskej akadémie vied Bratislava: Bratislava, p. 336-339.

Marticorena, C. (1990): Contribución a la estadística de la flora vascular de Chile.- Gayana botanica 47: 85-113.

Martinez Gordillo, M.; Valencia Avalos, S. & Calonico Soto, J. (1997): Flora de Papalutla, Guerrero y de sus alrededores. (Flora of Papalutla, Guerrero, and surroundings).- Anales del Instituto de Biología. Serie Botánica 68 (2): 107-133.

Mateo Sanz, G. (1983): Estudio sobre la flora y vegetacion de las sierras de Mira y Talayuelas. Instituto Nacional para la Conservacion de la Naturaleza, Ministerio Agricultura, Pesca y Alimentacion: Madrid.

Matthew, K.M. (1998): A flora for Tamilnadu, South India. In: Dransfield, J.; Coode, M.E.J. & Simpson, D.A. (eds.): Plant diversity in Malesia III. Royal Botanical Gardens, Kew: Kew, p. 141-151.

McCallum, D.A. & Balkwill, K. (1999): Conservation of Angiosperm species richness on the Witwatersrand, South Africa. In: Timberlake, J. & Kativu, S. (eds.): African plants: biodiversity, taxonomy and uses. Royal Botanic Gardens, Kew: Kew, p. 237-243.

McLaughlin, S.P. (1995): An Overview of the Flora of the Sky Islands, Southeastern Arizona: Diversity, Affinities, and Insularity. In: DeBano, L.F.; Ffolliott, P.F.; Ortega-Rubio, A.; Gottfried, G.J.; Hamre, R.H. & Edminster, C.B. (eds.): Biodiversity and Management of the Madrean Archipelago: The Sky Islands of Southwestern United States and Northwestern Mexico. USDA Forest Service: Fort Collins, p. 60-70.

Medina Garcia, C.; Guevara Fefer, F.; Martinez Rodriguez, M.A.; Silva Saenz, P. & Chavez Carbajal, M.A. (2000): Estudio floristico en el area de la comunidad indigena de Nuevo San Juan Parangaricutiro, Michoacan, Mexico.- Acta botanica mexicana 52: 5-41.

Monod, T. (1986): The Sahel zone north of the Equator. In: Evenari, M.; Noy-Meir, I. & Goodall, W. (eds.): Ecosystems of the world 12B: Hot deserts and arid shrublands. Elsevier: Amsterdam, p. 203-243.

Morat, P. & Lowry II, P.P. (1997): Floristic richness in the Africa-Madagascar region: a brief history and prospective.- Adansonia 19: 101-115.

Morcom, L. & Westbrooke, M. (1990): The vegetation of Mallee Cliffs National Park.- Cunninghamia 2: 147-165.

Mori, S.A. (1989): Eastern, Extra-Amazonian Brazil. In: Campbell, D.G. & Hammond, D.H (eds.): Floristic inventory of tropical countries. The New York Botanical Garden: New York, p. 427-454.

Mulas, B. (1990): Contributo alla flora di Monte Arvi (Sardegna centro-occidentale).- Webbia 44: 63-90.

Muller, G.K. (1985): Zur floristischen Analyse der peruanischen Loma-Vegetation. (Floristic analysis of the Peruvian loma-vegetation.).- Flora 176: 153-165.

Munday, J. & Forbes, P.L. (1979): A preliminary check list of the flora of Inhaca Island, Mocambique: based on the collection of A. O. D. Mogg. ('n Voorlopige kontrolelys van die flora van Inhaca-Eiland, Mosambiek: gebaseer op die versameling van A. O. D. Mogg.).- Journal of South African botany 45: 1 - 10.

Myers, N. (1988): Threatened biotas: "hot spots" in tropical forests.- Environmentalist 8: 187-208.

Myers, N. (1990): The biodiversity challenge: expanded hot-spots analysis.- Environmentalist 10: 243-256.

Myers, N.; Lovett, J.C. & Burgess, N. (1999): Eastern Arc Mountains and Coastal Forests. In: Mittermeier, R.A.; Myers, N.; Gill, P.R. & Mittermeier, C.G. (eds.): Hotspots: Earth´s biologically richest and most endangered ecosystems. CEMEX / Conservation International: Mexico, D.F., p. 204-217.

Naik, V.N. (1981): A survey of the flora of Marathwada.- Bulletin of the Botanical Survey of India 23: 51-55.

Nair, K.K.N. (1989): Statistical and comparative study of the flora of Courtallum, south India.- Journal of the Indian Botanical Society 68: 273-275.

Naqshi, A.R.; Malla, M.Y. & Dar, G.H. (1989): Plants of Ladakh - Nubra.- Journal of economic and taxonomic botany 13: 539-560.

Naqshi, A.R.; Singh, G. & Koul, K.K. (1984): Plants of Gulmarg (Kashmir).- Journal of economic and taxonomic botany 5: 709-741.

Naskar, K. & Guha Bakshi, D.N. (1993): The biological spectrum of the floral elements of the 24-Parganas district in west Bengal.- Bangladesh Journal of Botany 22: 15-20.

Neldner, V.J. (1992): Vascular plants of western Queensland.- Queensland botany bulletin 11: 171.

Netien, G. (1993): Flore Lyonnaise. Societé Linnéenne de Lyon ed.: Lyon.

Oliveira-Filho, A.T.; Curi, N.; Vilela, E.A. & Carvalho, D.A. (1997): Tree species distribution along soil catenas in a riverside semideciduous forest in southeastern Brazil.- Flora 192: 47-64.

Olivier, I.; Muracciole, M. & Reduron, J.-P. (1995): Premiers bilans sur la flore des isles de la Mediterranee. Etat des connaissances et conservation.- Ecologia Mediterranea 21: 355-372.

Oommachan, M. & Shrivastava, J.L. (1988): Studies on flora of Jabalpur district (Madhya Pradesh).- Bulletin of the Botanical Survey of India 30: 140-145.

Ozenda, P. (1982): Les Végétaux dans la Biosphère. Doin Editeurs: Paris.

Pavlides, G. (1997): The flora of Presa National Park with emphasis on species of conservationm interest.- Hydrobiologia 351: 35-40.

Peng, H. (1997): The endemism in the flora of seed plants in Mt. Wuliangshan.- Acta Botanica Yunnanica 19: 1-14.

Phan, K.L. (1996): On the systematic structure of the Vietnamese flora. In: Zhang, A.L.; Wu, S.G. and others (eds.): Floristic characteristics and diversity of East Asian plants: proceedings of the first international symposium of floristic characteristics and diversity of East Asian plants. China Higher Education Press; Ber: Beijing, p. 120-129.

Phiri, P.S.M. (1994): The relevance of plant taxonomic information for the conservation of the low altitude Luangwa Valley ecosystem in Zambia. In: Seyani, J.H. & Chikuni, A.C. (eds.): Proc. XIIIth Plenary Meeting AETFAT. National Herbarium and Botanic Gardens of Malawi, Zomba: Malawi, p. 903-910.

Pignatti, S. (1982): Flora d´Italia (Volume I, II, III). Edagricole: Bologna.

Poldini, L. (1971): Notizie sulla flora del Triestino.- Informatore botanico italiano 3: 169-172.

Polunin, O. & Stainton, J.D. (1984): Flowers of the Himalaya. Oxford University Press: New Dehli.

Porsild, A.E. (1974): Materials for a Flora of Central Yukon Territory. National Museum of Canada: Ottawa.

Post, G.E. (1932): Flora of Syria, Palestine and Sinai. American Press: Beirut.

Prance, G.T. (1989): American Tropical Forests. In: Lieth, H. & Werger, M.J.A. (eds.): Ecosystems of the World 14B: Tropical Rain Forest Ecosystems. Elsevier: Amsterdam, p. 99-132.

Pullaiah, T. & Yesoda, N. (1989): Flora of Anantapur District Andhra Pradesh, India. Bishen Singh Mahendra Pal Singh: Dehra Dun.

Pullaiah, T.; Prabhakar, C. & Raviprasad Rao, B. (1998): Flora of Medak District Andhra Pradesh, India. Daya-Publishing House: Delhi.

Pullaiah, T.; Prasanna, P.V. & Obuleso, G. (1992): Flora of Adilabad District (Andhra Pradesh, India). CBS Publishers & Distributors: Shadra.

Pulllaiah, T. & Ravi Prasad Rao, B. (1995): Flora of Nizamabad. Bishen Singh Mahendra Pal Singh: Dehra Dun.

Qi, Q.J. and others (1994): Flora of Hunan Badagongshan Mountains and its phytogeographical significance.- Acta Botanica Yunnanica 16: 321-332.

Raffaelli, M. & Rizotto, M. (1991): Contributo alla conoszenza della flora dell´Alpe della Luna (Appennino Aretino Toscana).- Webbia 46: 19-79.

Rechinger, K.H. & Wendelbo, P. (1976): Plants of the Kavir protected region, Iran.- Iranian Journal of Botany 1: 23 - 56.

Regula-Bevilacqua, L. (1991): Beitrag zur Flora des Gebietes von Krapina, Radoboj und des Gebirgszuges Strahinscica in Hrvatsko Zagorje. (Contribution to the flora of Krapina, Radoboj and Strahinscica mountains in Hrvatsko Zagorje.).- Acta botanica Croatica 50: 115-127.

Reyes Aguero, J.A.; Gonzalez Medrano, F. & Garcia Perez, J.D. (1996): Flora vascular de la Sierra Monte Grande, municipio de Charcas, San Luis Potosí, Mexico. (Vascular flora of Sierra Monte Grande, Charcas municipality, San Luis Potosi.).- Boletin de la Sociedad Botanica de Mexico 58: 31-42.

Ribeiro, J.E.L.S.; Nelson, B.W.; Silva, M.F.M.L.S.S. & Hopkins, M. (1994): Reserva florestal Ducke: Diversidade e Composicao da flora vascular.- Acta amazonica 24: 19-30.

Rippey, E. & Rowland, B. (1995): Plants of the Perth Coast and islands. University of Western Australia Press: Nedlands, W.A.

Rodd, A.N. & Pickard, J. (1983): Census of vascular flora of Lord Howe Island.- Cunninghamia 1: 267-280.

Rogers, G. & Overton, J. (2000): Regional patterns of plant species richness in southern New Zealand.- New Zealand Journal of Botany 38: 609-627.

Rundel, P.W.; Dillon, M.O. & Palma, B. (1996): Flora and vegetation of Pan de Azucar National Park in the Atacama Desert of Northern Cile.- Gayana botanica 53: 295-315.

Rzedowski, J. & de Rzedowski, G.C. (1989): Transisthmic Mexico (Campeche, Chiapas, Quintana Roo, Tabasco and Yucatan). In: Campbell, D.G. & Hammond, H.D. (eds.): Floristic inventory of tropical countries. The New York Botanical Garden: New York, p. 270-280.

Rzedowski, J. (1983): Vegetacion de Mexico. Editorial Limusa: Mexico City.

Rzedowski, J. (1991): Diversidad y origenes de la flora fanerogamica de Mexico.- Acta botanica mexicana 14: 3-21.

Saini, D.C. (1996): Flora of Gorakhpur, check list: 1. (Ranunculaceae to Plumbaginaceae).- Journal of economic and taxonomic botany 20: 35-83.

Saldanha, C.J. (1984): Flora of Karnataka. Oxford & IBH Publishing CO: New Dehli.

Samo Lumbreras, A.J. (1995): Catálogo floristico de la provincia de Castellon. Disputació de Castello: Castello.

Samvatsar, S. (1996): The Flora of Western Tribal Madhya Pradesh (India). Scientific Publishers: Jodhpur.

Sarmiento, G. (1983): The Savannas of Tropical America. In: Bourlière, F. (ed.): Ecosystems of the World 13. Tropical Savannas. Elsevier: Amsterdam, p. 245-288.

Sasidharan, N. & Sivarajan, V.V. (1996): Flowering Plants of Thrissur Forests (Western Ghats, Kerala, India). Scientific Publishers: Jodhpur.

Saxena, H.O. & Brahman, M. (1996): The Flora of Orissa. Volume IV Flagellariaceae to Poaceae, Gymnosperms and Pteridophyta. Orissa Forest Development Corporation: Bhubaneswar.

Schulz, E. (1979): Zur Flora und Vegetation der Randgebiete des Murzuk-Beckens (Fezzan-Libyen und Nord-Niger). (On the flora and vegetation of the border area of the Marzuk basin, Fezzan-Libya and North Niger).- Willdenowia 9: 239 - 259.

Senthil Kumar, T. & Krishnamurthy, K.V. (1993): Flora of Shervaroy Hills of Eastern Ghats.- Journal of economic and taxonomic botany 17: 729-748.

Seshagiri Rao, R.; Venkanna, P. & Appi Reddy, T. (1986): Flora of West Godavari District (Andhra Pradesh, India). Indian Botanical Society: New Delhi.

Shah, G.L. & Menon, A.R.R. (1980): A contribution to the flora of Saurashtra: floristics, floristic, composition, floral elements and biological spectrum of Saurashtra, Gujarat.- Journal of economic and taxonomic botany 1: 1 - 10.

Sharma, B.D. & Mamgain, R.M. (1983): Angiospermic flora of district Satna (M.P.).- Journal of economic and taxonomic botany 4: 1-79.

Sharma, M. & Rajpal, K. (1995): Flora of Punjab State: a phytogeographic assessment.- Journal of the Bombay Natural History Society 92: 160-165.

Shmida, A. & Wilson, M.V. (1985): Biological determinants of species diversity.- Journal of Biogeography 12: 1-20.

Smettan, H. (1989): Naturkundlicher Führer Kaisergebirge. Verein zum Schutz der Bergwelt e.V.-Selbstverlag: München.

Soriano, I. (1990): À propos de la flore de la Serra de Moixeró et du Massif de Tosa d´Alp (Pyrénées orientales ibériques). Instituto Pirenaico de Ecologia: Huesca.

Sosa, V. & Dávila, P. (1994): Una evaluación del conocimiento florístico de México.- Annals of the Missouri Botanical Garden 81: 749-757.

Stevanovic, V.; Niketic, M. & Lakusic, D. (1991): Chorological additions to the flora of eastern Yougoslavia.- Flora Mediterranea 1: 121-142.

Steyermark, J.A. & O. Huber (1978): Flora del Avila. Sociedad Venezolana de Ciencias Naturales; Vollmer Foundation; Ministerio del Ambiente y de los Recursos Naturales Renovables: Caracas.

Steyermark, J.A. (1994): Flora del Parque Nacional Morrocoy. Fundación Instituto Botánico de Venezuela y Agencia Espanola de Cooperación Internacional (AECI): .

Stuckey, R.L. & Barkley, T.M. (1993): Weeds. In: Flora of North America Editoral Committee (eds.): Flora of North America I: Introduction. Oxford University press: Oxford, p. 193-198.

Sun, H. & Zhou, Z.K. (1996): The characters and origin of the flora from the big bend gorge of Yalutsangpu (Brahmabutra) river, eastern Himalayas. (Chinese, with English Abstract).- Acta Botanica Yunnanica 18: 185-204.

Suominen, J. & Hämet-Ahti, L. (1988): Ihmistoiminnan varhaiseta vaikutuksesta Suomen kavistoon.- Memoranda Societatis pro Fauna et Flora Fennica 64: 11-14.

Szujkó-Lacza, J. & Kováts, D. (1982): The Flora of the Kiskunság National Park. In: Matskási, I. (ed.): Natural History of the National Parks of Hungary. Magyar Természettudományi Múzeum: Budapest, p. 105.

Szujkó-Lacza, J. (1982): The Flora of the Hortobágy Park and the two preserved forests. In: Kasab, Z. (ed.): Natural History of the National Parks of Hungary. Akadémiai Kiadó: Budapest, p. 7-18.

Takhtajan, A. (1986): Floristic Regions of the World (English ed.). University of California Press: London.

Teillier, S.; Hoffmann, A.J.; Saavedra, F. & Pauchard, L. (1994): Flora del Parque Nacional El Morado (Region Metropolitana, Chile).- Gayana botanica 51: 13-47.

Thorne, R.F. (1993): Phytogeography. In: Flora of North America Editorial Committee (ed.): Flora of North America North of Mexico. Oxford University Press: Oxford, p. 132-153.

Thulin, M. (1993): Flora of Somalia. Royal Botanical Gardens, Kew: Kew.

Tianwei, L. (1990): Taiyuan-zhiwuzhi (Flora Taiyuanica) Vol. 1. Acad. Publ. Press: Beijing.

Turland, N.J.; Chilton, L. & Press, J.R. (1993): Flora of the Cretan area. Annotated checklist & atlas. The Natural History Museum: London.

Tweedie, E.M. (1977): Habitats and check-list of plants on the Kenya side of Mount Elgon.- Kew bulletin 31: 227 - 257.

Ugemuge, N.R. (1986): Flora of Nagbur District, Maharashtra, India. U. Rekha: Shankarnagar.

Ulloa Ulloa, C. & Moller Jorgensen, P. (1993): Arboles y Arbustos de los Andes del Ecuador. Department of Systematic Botany, Aarhus University Press: Aarhus.

Valdés, B. (1991): Andalucia and the Rif. Floristic links and a common flora.- Botanika chronika 10: 117-124.

Valencia, R.; Balslev, H. & Paz y Mino C, G. (1994): High tree alpha-diversity in Amazonian Ecuador.- Biodiversity and Conservation 3: 21-28.

van Wyk, A.E. & Smith, G.F. (2001): Regions of Floristic Endemism in Southern Africa. Umdaus Press: Hatfield.

Van Wyk, A.E. (1996): Biodiversity of the Maputaland Centre. In: van der Maesen, L.J.G.; van der Burgt, X.M. & van Medenbach de Rooy, J.M. (eds.): The biodiversity of African plants: proceedings XIVth AETFAT congress, 22-27 August 1994, Wageningen, The Netherlands. Kluwer Academic: Dordrecht, p. 198-207.

Vangjeli, J. & Ruci, B. (2000): Flora and vegetation of Albania: an overview.- Botanika chronika 13: 469-478.

Victor, J.E.; Hoare, D.B. & Lubke, R.A. (2000): Checklist of plant species of the coastal fynbos and rocky headlands, south of George, South Africa.- Bothalia 30: 97-101.

Vilks, A. (1994): Analyse chorologique de la flore vasculaire du Limousin.- Bulletin de la Societe Botanique du Centre-Ouest / Numeros speciaux 25: 103-156.

Walter, H. & Breckle, S.-W. (1984): Spezielle Ökologie der tropischen und subtropischen Zonen. Fischer Verlag: Stuttgart.

Walter, H. & Breckle, S.-W. (eds.) (1991): Gemäßigte und arktische Zonen außerhalb Euro-Nordasiens. Fischer Verlag: Stuttgart.

Walter, H. (1974): Die Vegetation Osteuropas, Nord- und Zentralasiens. Fischer: Stuttgart.

Wang He-Sheng & Zhao Feng-Wei (1992): Floristic characteristics of mountain vegetation in Beijing-Tianjing region in China.- Braun-Blanquetia 8: 41-43.

Wang, H.; Chen, S. & Wang, S.-Y. (1989): China. In: Campbell, D.G. & Hammond, D.H. (eds.): Floristic inventory of tropical countries. The New York Botanical Garden: New York, p. 35-43.

Wen-pei, F. (1981): Flora Sichuanica. Vol 1 (Spermatophyta). Academia Sinica: Beijing.

Werger, M.J.A. (1986): The Karoo and Southern Kalahari. In: Evenari, M.; Noy-Meir, I. & Goodall, W. (eds.): Ecosystems of the world 12B: Hot deserts and arid shrublands. Elsevier: Amsterdam, p. 283-359.

Westbrooke, M.E. & Miller, J.D. (1995): The vegetation of Mungo National Park, Western New South Wales.- Cunninghamia 4: 63-80.

White, F. (ed.) (1983): The vegetation of Africa: a descriptive memoir to accompany the Unesco/AETFAT/UNSO vegetation map of Africa. Unesco: Paris.

Whitmore, T.C. (1989): Southeast Asian Tropical Forests. In: Lieth, H. & Werger, M.J.A. (eds.): Ecosystems of the World 14B: Tropical Rain Forest Ecosystems. Elsevier: Amsterdam, p. 195-218.

Wickens, G.E. (1976): The flora of Jebel Marra (Sudan Republic) and its geographical affinities. Her Majesty's Stationery Office: London.

Williams, O.B. & Calaby, J.H. (1985): The Hot Deserts of Australia. In: Evenari, M.; Noy-Meir, I. & Goodall, D.W. (eds.): Ecosystems of the World 12A: Hot Deserts and Arid Shrublands. Elsevier: Amsterdam, p. 269-312.

Williams, P., Humphries, C., Araujo, M., Lampinen, R., Hagemeijer, W., Gasc, J.-P. & Mitchell-Jones, T. (2000): Endemism and important areas for conserving European biodiversity: a preliminary exploration of atlas data for plants and terrestrial vertebrates.- Belgian Journal of Entomology 2: 21-46.

Wilmanns, O. (1989): Book review: Lalumière, R. & Thibault, M.: Les Forets du parc national de la Mauricie, au Québec.- Phytocoenologia 17: 595.

Wilson; Russel-Smith & Williams (1996): Terrestrial vegetation. In: Finlayson, C.M. & Oertzen, I. (eds.): Landscape and Vegetation Ecology of the Kakadu Region, Northern Australia. Kluwer Academic Publishers: Dordrecht, p. 57-79.

Wohlgemut, T. (1993): Der Verbreitungsatalas der Farn- und Blütenpflanzen der Schweiz (Welten und Sutter 1982) auf EDV: Die Artenzahlen und ihre Abhängigkeit vonverschiedenen Faktoren.- Botanica Helvetica 106: 227-260.

Wu, S.G.; Yang, Y.P. & Fei, Y. (1995): On the flora of the alpine region in the Qinghai-Xizang (Tibet) Plateau.- Acta Botanica Yunnanica 17: 233-250.

Wu, Y.H. (2000): The floristic characteristics in the region of Xiqing Mountains.- Acta Botanica Yunnanica 22: 237-247.

WWF (2001): Scientific reports on the terrestrial ecoregions of the world. www.worldwildlife.org/wildworld/profiles/terrestrial_aa.html. WWF: Washington DC.

WWF + TNC (2001): Ecoregion-based Conservation in the Bering Sea: identifying important areas for biodiversity conservation. World Wildlife Fund and The Nature Conservancy of Alaska: Washington D.C.

Xiwen, L. & Walker, D. (1986): The plant geography of Yunnan Province, southwest China.- Journal of Biogeography 13: 367-397.

Ying, T.-S.; Zhang, Y.-l. & Boufford, D.E. (1993): The endemic genera of seed plants of China. Science Press: Beijing.

Young, K.R. (1991): Floristic diversity on the eastern slopes of the peruvian Andes.- Candollea 46 (1): 125-143.

Zambatis, N. (1994): Ferns and flowering plants of Klaserie Private Nature Reserve, eastern Transvaal: an annotated checklist.- Bothalia 24: 37-53.

Zhang, Y.; Pu, X.; Sun, J.; Zhang, G. & Feng, H. (1997): A preliminary study on the spermatophytic flora from Taohe river in Gansu.- Acta Botanica Yunnanica 19: 15-22.

Zheng-Da, Z. & Hong-Jian, C. (1992): A study of the montane vegetation of the Liu Pan Mountains.- Braun-Blanquetia 8: 60-62.

Zhicheng, N. & Shuzhi, C. (eds.) (1992): The Flora of the Vascular Plants in Mt. Namajagbarwa Region of Xizang (Tibet). Science & Technology Publ. House: Beijing.

Zhu, Z.; Ma, Y.; Liu, Z. & Zhao, Y. (1996): The endemic plants and floristic characteristics in Alashan-ordos biodiversity centre. In: Zhang, A.L.; Wu, S.G. and others (eds.): Floristic characteristics and diversity of East Asian plants: proceedings of the first international symposium of floristic characteristics and diversity of East Asian plants. China Higher Education Press; Ber: Beijing, p. 188-197.

Zohary, M. (1962): Plant life of Palestine. Israel and Jordan. The Ronald Press Company: New York.

Zohary, M. (1966): Flora Palaestina. Part one, text. Equisetaceae to Moringaceae. The Israel Academy of Sciences and Humanities: Jerusalem.

Appendix S2 Table with quantitative results for each ecoregion: working figure of species richness, minimum and maximum species richness, quality and suitability of underlying data

eco_id	eco_id2	eco_name	area	sp_wfig	sp_range	data_sit
10101	AA0101	Admiralty Islands lowland rain forests	2108	2000	1600-2800	3
10102	AA0102	Banda Sea Islands moist deciduous forests	7528	1200	1200-2000	3
10103	AA0103	Biak-Numfoor rain forests	2822	1500	1000-2200	3
10104	AA0104	Buru rain forests	8624	1700	1000-2200	3
10105	AA0105	Central Range montane rain forests	171992	7500	6000-9000	2
10106	AA0106	Halmahera rain forests	26865	2000	1600-2400	3
10107	AA0107	Huon Peninsula montane rain forests	16522	5500	4500-7000	2
10108	AA0108	Japen rain forests	2418	1500	1000-2000	3
10109	AA0109	Lord Howe Island subtropical forests	14	210	200-219	1
10110	AA0110	Louisiade Archipelago rain forests	1615	3200	3000-4000	2
10111	AA0111	New Britain-New Ireland lowland rain forests	35070	2700	2000-5000	3
10112	AA0112	New Britain-New Ireland montane rain forests	12134	2500	2300-3500	3
10113	AA0113	New Caledonia rain forests	14564	3000	2900-3100	2
10114	AA0114	Norfolk Island subtropical forests	42	165	x	1
10115	AA0115	Northern New Guinea lowland rain and freshwater swamp forests	135241	4400	3500-5300	3
10116	AA0116	Northern New Guinea montane rain forests	23288	3000	2500-4000	3
10117	AA0117	Queensland tropical rain forests	32695	4800	4700-5500	2
10118	AA0118	Seram rain forests	19363	2100	2000-2500	2
10119	AA0119	Solomon Islands rain forests	35851	4800	4400-5200	2
10120	AA0120	Southeastern Papuan rain forests	77360	5500	4500-7000	2
10121	AA0121	Southern New Guinea freshwater swamp forests	99927	2100	1600-2600	3
10122	AA0122	Southern New Guinea lowland rain forests	122874	4000	3000-5000	2
10123	AA0123	Sulawesi lowland rain forests	116329	3900	3000-4300	3
10124	AA0124	Sulawesi montane rain forests	75814	2200	2000-3500	3
10125	AA0125	Trobriand Islands rain forests	4196	2800	2600-3500	3
10126	AA0126	Vanuatu rain forests	13204	950	870-1050	2
10127	AA0127	Vogelkop montane rain forests	21950	5500	4500-6500	3
10128	AA0128	Vogelkop-Aru lowland rain forests	77409	3500	3000-5500	3
10201	AA0201	Lesser Sundas deciduous forests	39447	2500	1500-3500	3
10202	AA0202	New Caledonia dry forests	4420	430	409-450	1
10203	AA0203	Sumba deciduous forests	10765	900	800-1400	3
10204	AA0204	Timor and Wetar deciduous forests	33524	1600	1400-2000	3
10401	AA0401	Chatham Island temperate forests	804	315	x	1
10402	AA0402	Eastern Australian temperate forests	222061	3700	3300-4500	3
10403	AA0403	Fiordland temperate forests	11029	750	600-900	3
10404	AA0404	Nelson Coast temperate forests	14575	1300	1250-1350	2
10405	AA0405	Northland temperate forests	84423	1200	1100-1300	2
10406	AA0406	Northland temperate kauri forests	29930	850	800-900	2
10407	AA0407	Rakiura Island temperate forests	1690	570	567-580	1
10408	AA0408	Richmond temperate forests	13196	1000	800-1200	2
10409	AA0409	Southeast Australia temperate forests	272312	2400	1700-3200	3
10410	AA0410	Southland temperate forests	11684	650	600-800	3
10411	AA0411	Tasmanian Central Highland forests	18701	700	500-900	3
10412	AA0412	Tasmanian temperate forests	18211	600	400-800	3
10413	AA0413	Tasmanian temperate rain forests	31266	800	600-1000	3
10414	AA0414	Westland temperate forests	5277	700	500-900	3
10701	AA0701	Arnhem Land tropical savanna	158118	2500	2200-3000	2
10702	AA0702	Brigalow tropical savanna	342315	1600	1200-2000	3
10703	AA0703	Cape York tropical savanna	116333	3100	2900-3200	2
10704	AA0704	Carpentaria tropical savanna	359650	1600	1200-2100	4
10705	AA0705	Einasleigh upland savanna	128475	1600	1200-2000	4
10706	AA0706	Kimberley tropical savanna	347852	2000	1800-2200	2
10707	AA0707	Mitchell grass downs	460746	900	500-1300	4
10708	AA0708	Trans Fly savanna and grasslands	26731	2200	1000-3000	3
10709	AA0709	Victoria Plains tropical savanna	225637	1200	800-1800	3
10801	AA0801	Cantebury-Otago tussock grasslands	53478	800	650-900	3
10802	AA0802	Eastern Australia mulga shrublands	253916	800	700-1100	2
10803	AA0803	Southeast Australia temperate savanna	322226	900	600-1300	4
11001	AA1001	Australian Alps montane grasslands	11995	1000	700-1500	3
11002	AA1002	Central Range sub-alpine grasslands	15571	1800	1500-2500	3
11003	AA1003	Southland montane grasslands	39929	850	750-950	3
11101	AA1101	Antipodes Subantarctic Islands tundra	1679	240	220-250	1
11201	AA1201	Coolgardie woodlands	137375	1800	1400-2200	3
11202	AA1202	Esperance mallee	115514	2900	2600-3300	3
11203	AA1203	Eyre and York mallee	60923	2000	1500-2500	4
11204	AA1204	Jarrah-Karri forest and shrublands	10445	2200	1800-2600	2
11205	AA1205	Kwongan heathlands (Swan Coastal Plain Scrub and Woodlands)	15227	2300	2000-2600	2
11206	AA1206	Mount Lofty woodlands	23785	2000	1500-2500	2

11207	AA1207	Murray-Darling woodlands and mallee	197923	1100	600-1600	3
11208	AA1208	Naracoorte woodlands	27509	1500	1000-2000	4
11209	AA1209	Southwest Australia savanna	168896	1900	1500-2300	3
11210	AA1210	Southwest Australia woodlands	46045	2000	1600-2400	3
11301	AA1301	Carnarvon xeric shrublands	90487	700	400-1000	4
11302	AA1302	Central Ranges xeric scrub	281669	1400	1300-1500	2
11303	AA1303	Gibson desert	155870	400	200-600	4
11304	AA1304	Great Sandy-Tanami desert	823008	500	400-600	2
11305	AA1305	Great Victoria desert	424354	400	200-600	3
11306	AA1306	Nullarbor Plains xeric shrublands	195200	200	120-300	3
11307	AA1307	Pilbara shrublands	179779	800	500-1200	4
11308	AA1308	Simpson desert	584499	800	500-1100	3
11309	AA1309	Tirari-Sturt stony desert	376890	800	500-1100	3
11310	AA1310	Western Australian Mulga shrublands	460453	900	600-1200	4
11401	AA1401	New Guinea mangroves	26827	250	20-400	4
21101	AN1101	Marielandia Antarctic tundra	1146479	2	x	1
21102	AN1102	Maudlandia Antarctic desert	2115534	0	x	1
21103	AN1103	Scotia Sea Island tundra	8468	24	x	1
21104	AN1104	Southern Indian Ocean Island tundra	8153	35	29-45	2
30101	AT0101	Albertine Rift montane forests	103870	3500	3000-4000	2
30102	AT0102	Atlantic Equatorial coastal forests	189665	6000	5500-6800	2
30103	AT0103	Cameroonian Highlands forests	38045	3300	3000-4000	4
30104	AT0104	Central Congolian lowland forests	414758	3600	3200-4300	2
30105	AT0105	Comoros forests	2063	1500	1300-1700	2
30106	AT0106	Cross-Niger transition forests	20720	2100	1800-2600	3
30107	AT0107	Cross-Sanaga-Bioko coastal forests	52150	4000	3700-4400	2
30108	AT0108	East African montane forests	65498	4000	3500-5000	3
30109	AT0109	Eastern Arc forests	23658	3200	2900-3600	2
30110	AT0110	Eastern Congolian swamp forests	92736	2000	1600-2400	3
30111	AT0111	Eastern Guinean forests	189409	3200	3000-3500	2
30112	AT0112	Ethiopian montane forests	248762	4000	3000-5000	3
30113	AT0113	Granitic Seychelles forests	289	280	260-300	2
30114	AT0114	Guinean montane forests	31051	2700	2400-3000	2
30115	AT0115	Knysna-Amatole montane forests	3069	1000	600-1800	3
30116	AT0116	KwaZulu-Cape coastal forest mosaic	17792	2000	1500-2800	3
30117	AT0117	Madagascar lowland forests	112640	6000	5000-7000	2
30118	AT0118	Madagascar subhumid forests	199509	3200	2500-4000	3
30119	AT0119	Maputaland coastal forest mosaic	30202	2700	2500-3000	2
30120	AT0120	Mascarene forests	4946	950	900-1200	2
30121	AT0121	Mount Cameroon and Bioko montane forests	1146	3300	3000-3800	3
30122	AT0122	Niger Delta swamp forests	14407	1500	1200-1800	3
30123	AT0123	Nigerian lowland forests	67263	3000	2800-3200	2
30124	AT0124	Northeastern Congolian lowland forests	533473	3600	3200-4300	2
30125	AT0125	Northern Zanzibar-Inhambane coastal forest mosaic	111829	3300	2700-4500	3
30126	AT0126	Northwestern Congolian lowland forests	434148	4100	3500-5000	3
30127	AT0127	Sao Tome and Principe moist lowland forests	1038	950	900-1100	2
30128	AT0128	Southern Zanzibar-Inhambane coastal forest mosaic	144779	2800	2400-3500	3
30129	AT0129	Western Congolian swamp forests	128643	2100	1700-2500	3
30130	AT0130	Western Guinean lowland forests	206688	3300	3100-3600	3
30201	AT0201	Cape Verde Islands dry forests	4564	257	x	1
30202	AT0202	Madagascar dry deciduous forests	151328	2100	1800-2400	2
30203	AT0203	Zambezian Cryptosepalum dry forests	38229	1300	800-1700	4
30701	AT0701	Angolan Miombo woodlands	660083	2400	1800-3200	3
30702	AT0702	Angolan Mopane woodlands	133462	1100	900-1400	3
30703	AT0703	Ascension scrub and grasslands	93	25	x	1
30704	AT0704	Central Zambezian Miombo woodlands	1184205	3800	3300-4300	3
30705	AT0705	East Sudanian savanna	917581	2300	2000-2700	3
30706	AT0706	Eastern Miombo woodlands	483901	2800	2500-3300	3
30707	AT0707	Guinean forest-savanna mosaic	673601	2500	2200-3000	3
30708	AT0708	Itigi-Sumbu thicket	7843	1000	500-1500	4
30709	AT0709	Kalahari Acacia-Baikiaea woodlands	335478	1400	1300-1900	3
30710	AT0710	Mandara Plateau mosaic	7509	600	400-800	4
30711	AT0711	Northern Acacia-Commiphora bushlands and thickets	325951	1300	1100-1500	2
30712	AT0712	Northern Congolian forest-savanna mosaic	708130	2500	2100-2900	3
30713	AT0713	Sahelian Acacia savanna	3053217	1300	1200-1400	2
30714	AT0714	Serengeti volcanic grasslands	18029	1000	500-1500	4
30715	AT0715	Somali Acacia-Commiphora bushlands and thickets	1053347	2600	2300-3000	2
30716	AT0716	Southern Acacia-Commiphora bushlands and thickets	227783	2300	1800-2800	3
30717	AT0717	Southern Africa bushveld	223106	1500	1000-2000	3
30718	AT0718	Southern Congolian forest-savanna mosaic	569692	3000	2700-3500	3
30719	AT0719	Southern Miombo woodlands	408257	2200	1800-3000	3
30720	AT0720	St. Helena scrub and woodlands	130	60	x	1

30721	AT0721	Victoria Basin forest-savanna mosaic	165792	2500	2300-3000	2
30722	AT0722	West Sudanian savanna	1638522	2100	1700-2500	2
30723	AT0723	Western Congolian forest-savanna mosaic	413492	3300	3000-3700	2
30724	AT0724	Western Zambezian grasslands	34016	800	600-1200	4
30725	AT0725	Zambezian and Mopane woodlands	473318	2500	2200-3200	3
30726	AT0726	Zambezian Baikiaea woodlands	264437	1300	1200-1800	3
30801	AT0801	Al Hajar Al Gharbi montane woodlands	25548	700	500-1000	3
30802	AT0802	Amsterdam and Saint-Paul Islands temperate grasslands	69	60	55-70	2
30803	AT0803	Tristan Da Cunha-Gough Islands shrub and grasslands	167	90	80-100	2
30901	AT0901	East African halophytics	2637	80	50-200	4
30902	AT0902	Etosha Pan halophytics	7231	80	30-200	3
30903	AT0903	Inner Niger Delta flooded savanna	46032	500	300-800	4
30904	AT0904	Lake Chad flooded savanna	18833	600	400-800	4
30905	AT0905	Saharan flooded grasslands	179722	1300	900-1700	4
30906	AT0906	Zambezian coastal flooded savanna	19545	1100	700-1500	4
30907	AT0907	Zambezian flooded grasslands	153452	1400	1000-1900	4
30908	AT0908	Zambezian halophytics	30371	80	50-200	4
31001	AT1001	Angolan montane forest-grassland mosaic	25518	2000	1700-2500	3
31002	AT1002	Angolan scarp savanna and woodlands	74358	1500	1000-2000	4
31003	AT1003	Drakensberg alti-montane grasslands and woodlands	11908	800	400-1200	3
31004	AT1004	Drakensberg montane grasslands, woodlands and forests	202216	3700	3000-4500	2
31005	AT1005	East African montane moorlands	3289	400	350-550	3
31006	AT1006	Eastern Zimbabwe montane forest-grassland mosaic	7828	1700	1200-2600	3
31007	AT1007	Ethiopian montane grasslands and woodlands	245361	2000	1700-2500	3
31008	AT1008	Ethiopian montane moorlands	25154	700	600-800	2
31009	AT1009	Highveld grasslands	186165	1900	1600-2200	2
31010	AT1010	Jos Plateau forest-grassland mosaic	13337	1300	900-1600	3
31011	AT1011	Madagascar ericoid thickets	1278	1000	600-1500	4
31012	AT1012	Maputaland-Pondoland bushland and thickets	19533	2100	1800-3000	3
31013	AT1013	Ruwenzori-Virunga montane moorlands	2673	400	350-550	3
31014	AT1014	South Malawi montane forest-grassland mosaic	10228	1900	1500-2800	3
31015	AT1015	Southern Rift montane forest-grassland mosaic	33497	1900	1500-2500	3
31201	AT1201	Albany thickets	17098	1200	700-2000	3
31202	AT1202	Lowland fynbos and renosterveld	32553	3000	2500-3500	3
31203	AT1203	Montane fynbos and renosterveld	45780	6300	5500-7000	2
31301	AT1301	Aldabra Island xeric scrub	182	180	170-200	2
31302	AT1302	Arabian Peninsula coastal fog desert	82969	1000	700-1200	3
31303	AT1303	East Saharan montane xeric woodlands	27871	700	600-800	2
31304	AT1304	Eritrean coastal desert	4425	100	50-200	4
31305	AT1305	Ethiopian xeric grasslands and shrublands	152173	850	700-1000	3
31306	AT1306	Gulf of Oman desert and semi-desert	62449	300	200-500	3
31307	AT1307	Hobyo grasslands and shrublands	26098	800	600-1000	3
31308	AT1308	Ile Europa and Bassas da India xeric scrub	22	80	40-250	4
31309	AT1309	Kalahari xeric savanna	588118	700	600-900	2
31310	AT1310	Kaokoveld desert	45739	500	300-800	3
31311	AT1311	Madagascar spiny thickets	44279	1100	800-1500	3
31312	AT1312	Madagascar succulent woodlands	79857	1400	1000-1800	3
31313	AT1313	Masai xeric grasslands and shrublands	100960	900	700-1300	4
31314	AT1314	Nama Karoo	351112	1100	1000-1300	2
31315	AT1315	Namib desert	80874	1000	700-1800	3
31316	AT1316	Namibian savanna woodlands	225512	1100	900-1800	3
31317	AT1317	Red Sea coastal desert	56323	350	200-500	3
31318	AT1318	Socotra Island xeric shrublands	3819	750	500-1000	2
31319	AT1319	Somali montane xeric woodlands	62157	1500	1100-1800	2
31320	AT1320	Southwestern Arabian foothills savanna	274663	400	200-700	3
31321	AT1321	Southwestern Arabian montane woodlands	86917	2000	1500-2200	2
31322	AT1322	Succulent Karoo	102658	4850	4800-5000	2
31401	AT1401	Central African mangroves	29910	200	20-400	4
31402	AT1402	East African mangroves	15137	200	20-400	4
31403	AT1403	Guinean mangroves	22762	200	20-400	4
31404	AT1404	Madagascar mangroves	5530	200	20-400	4
31405	AT1405	Southern Africa mangroves	994	200	20-400	4
40101	IM0101	Andaman Islands rain forests	5718	1827	x	1
40102	IM0102	Borneo lowland rain forests	427512	10000	8000-15000	3
40103	IM0103	Borneo montane rain forests	115599	4000	3000-5500	2
40104	IM0104	Borneo peat swamp forests	67474	2500	2000-3000	2
40105	IM0105	Brahmaputra Valley semi-evergreen forests	56713	2500	1500-3500	3
40106	IM0106	Cardamom Mountains rain forests	44248	3000	2000-4000	3
40107	IM0107	Chao Phraya freshwater swamp forests	39001	1100	900-1500	3
40108	IM0108	Chao Phraya lowland moist deciduous forests	20414	2000	1500-3000	3
40109	IM0109	Chin Hills-Arakan Yoma montane forests	29696	2600	2200-3200	3
40110	IM0110	Christmas and Cocos Islands tropical forests	135	220	200-240	2

40111	IM0111	Eastern highlands moist deciduous forests	341149	1600	1200-2200	2
40112	IM0112	Eastern Java-Bali montane rain forests	15898	1500	1000-2200	3
40113	IM0113	Eastern Java-Bali rain forests	53898	2900	2200-3500	3
40114	IM0114	Greater Negros-Panay rain forests	34999	3000	2500-3500	3
40115	IM0115	Himalayan subtropical broadleaf forests	38187	1800	1500-2500	3
40116	IM0116	Irrawaddy freshwater swamp forests	15158	1000	700-2000	3
40117	IM0117	Irrawaddy moist deciduous forests	138290	1800	1500-2800	3
40118	IM0118	Jian Nan subtropical evergreen forests	663569	5500	4500-7500	2
40119	IM0119	Kayah-Karen montane rain forests	119541	4000	3000-5500	3
40120	IM0120	Lower Gangetic Plains moist deciduous forests	254061	3500	2500-4500	3
40121	IM0121	Luang Prabang montane rain forests	71813	3800	2500-5000	3
40122	IM0122	Luzon montane rain forests	8301	1500	1300-2300	3
40123	IM0123	Luzon rain forests	95469	5000	4000-6000	3
40124	IM0124	Malabar Coast moist forests	35465	1500	1200-2500	3
40125	IM0125	Maldives-Lakshadweep-Chagos Archipelago tropical moist forests	292	380	350-450	2
40126	IM0126	Meghalaya subtropical forests	41712	3000	1500-4500	3
40127	IM0127	Mentawai Islands rain forests	6498	1500	1000-2000	3
40128	IM0128	Mindanao montane rain forests	18197	2000	1200-2800	3
40129	IM0129	Mindanao-Eastern Visayas rain forests	105113	4300	3500-5000	3
40130	IM0130	Mindoro rain forests	10117	2500	2000-3000	3
40131	IM0131	Mizoram-Manipur-Kachin rain forests	135558	3800	2800-4500	3
40132	IM0132	Myanmar coastal rain forests	66552	2200	1800-3000	3
40133	IM0133	Nicobar Islands rain forests	1696	1379	x	1
40134	IM0134	North Western Ghats moist deciduous forests	48204	2300	1800-3000	3
40135	IM0135	North Western Ghats montane rain forests	30936	2800	2300-3500	3
40136	IM0136	Northern Annamites rain forests	47207	3000	2000-4500	3
40137	IM0137	Northern Indochina subtropical forests	437007	7000	5000-9000	2
40138	IM0138	Northern Khorat Plateau moist deciduous forests	16849	1500	1200-2500	3
40139	IM0139	Northern Thailand-Laos moist deciduous forests	42144	2300	1500-3500	3
40140	IM0140	Northern Triangle subtropical forests	53874	3500	2500-4500	3
40141	IM0141	Northern Vietnam lowland rain forests	22595	2800	2000-4000	3
40142	IM0142	Orissa semi-evergreen forests	22293	1400	1200-1900	2
40143	IM0143	Palawan rain forests	14334	2700	2500-3000	2
40144	IM0144	Peninsular Malaysian montane rain forests	17175	3200	3000-4000	2
40145	IM0145	Peninsular Malaysian peat swamp forests	3628	1100	800-1500	3
40146	IM0146	Peninsular Malaysian rain forests	125508	7000	6000-8500	2
40147	IM0147	Red River freshwater swamp forests	10755	800	600-1200	3
40148	IM0148	South China Sea Islands	35	400	200-600	3
40149	IM0149	South China-Vietnam subtropical evergreen forests	224306	6500	5000-9000	2
40150	IM0150	South Western Ghats moist deciduous forests	23772	2300	1700-3000	3
40151	IM0151	South Western Ghats montane rain forests	22637	3300	2800-3800	2
40152	IM0152	Southern Annamites montane rain forests	46483	4000	3000-5000	3
40153	IM0153	Southwest Borneo freshwater swamp forests	36769	1400	1000-1800	3
40154	IM0154	Sri Lanka lowland rain forests	12555	2000	1700-2600	3
40155	IM0155	Sri Lanka montane rain forests	3079	2200	1800-2800	3
40156	IM0156	Sulu Archipelago rain forests	2334	1400	1000-1800	3
40157	IM0157	Sumatran freshwater swamp forests	18076	1600	1200-2000	3
40158	IM0158	Sumatran lowland rain forests	259455	7500	6000-8500	2
40159	IM0159	Sumatran montane rain forests	72946	3500	2800-4500	2
40160	IM0160	Sumatran peat swamp forests	87517	2000	1000-2500	3
40161	IM0161	Sundaland heath forests	76553	1600	1200-2200	3
40162	IM0162	Sundarbans freshwater swamp forests	14561	800	700-1500	3
40163	IM0163	Tenasserim-South Thailand semi-evergreen rain forests	97322	4000	3000-6000	3
40164	IM0164	Tonle Sap freshwater swamp forests	26029	800	500-1300	3
40165	IM0165	Tonle Sap-Mekong peat swamp forests	29381	700	400-1100	3
40166	IM0166	Upper Gangetic Plains moist deciduous forests	263099	2100	1500-2500	3
40167	IM0167	Western Java montane rain forests	26285	2000	1500-2500	3
40168	IM0168	Western Java rain forests	41662	3500	2500-4200	3
40169	IM0169	Hainan Island monsoon rain forests	15536	3000	2200-3800	3
40170	IM0170	Nansei Islands subtropical evergreen forests	4068	2000	1500-3000	3
40171	IM0171	South Taiwan monsoon rain forests	2577	2700	1500-3500	3
40172	IM0172	Taiwan subtropical evergreen forests	33400	3000	2200-4000	3
40201	IM0201	Central Deccan Plateau dry deciduous forests	240159	1800	1300-2500	2
40202	IM0202	Central Indochina dry forests	320077	3000	2000-4000	3
40203	IM0203	Chhota-Nagpur dry deciduous forests	122423	1200	1000-2200	3
40204	IM0204	East Deccan dry-evergreen forests	25533	1200	1000-2000	3
40205	IM0205	Irrawaddy dry forests	35087	1000	700-1600	3
40206	IM0206	Khathiar-Gir dry deciduous forests	266975	1400	1200-1900	2
40207	IM0207	Narmada Valley dry deciduous forests	169883	1000	800-1600	3
40208	IM0208	Northern dry deciduous forests	58322	1000	800-1800	3
40209	IM0209	South Deccan Plateau dry deciduous forests	82253	2000	1500-3000	3
40210	IM0210	Southeastern Indochina dry evergreen forests	124260	4000	3000-6000	3

40211	IM0211	Southern Vietnam lowland dry forests	35038	1700	1500-2500	3
40212	IM0212	Sri Lanka dry-zone dry evergreen forests	48421	1200	900-1800	3
40301	IM0301	Himalayan subtropical pine forests	76203	1000	800-1800	3
40302	IM0302	Luzon tropical pine forests	7076	1300	1000-2000	3
40303	IM0303	Northeast India-Myanmar pine forests	9705	1000	700-1800	3
40304	IM0304	Sumatran tropical pine forests	2761	1000	500-1500	3
40401	IM0401	Eastern Himalayan broadleaf forests	83050	4500	3500-5500	3
40402	IM0402	Northern Triangle temperate forests	10727	2500	1500-3500	3
40403	IM0403	Western Himalayan broadleaf forests	55862	1200	1000-2000	3
40501	IM0501	Eastern Himalayan subalpine conifer forests	27480	2000	1500-3000	3
40502	IM0502	Western Himalayan subalpine conifer forests	39676	1000	800-1800	3
40701	IM0701	Terai-Duar savanna and grasslands	34580	1000	600-1400	3
40901	IM0901	Rann of Kutch seasonal salt marsh	27904	800	200-1200	3
41001	IM1001	Kinabalu montane alpine meadows	4339	3800	3000-4500	2
41301	IM1301	Deccan thorn scrub forests	340260	1300	1000-2000	2
41302	IM1302	Indus Valley desert	19497	400	300-500	4
41303	IM1303	Northwestern thorn scrub forests	488301	1000	800-1200	2
41304	IM1304	Thar desert	238654	650	550-750	2
41401	IM1401	Godavari-Krishna mangroves	7004	200	20-400	4
41402	IM1402	Indochina mangroves	26869	200	20-400	4
41403	IM1403	Indus River Delta-Arabian Sea mangroves	5793	200	20-400	4
41404	IM1404	Myanamar Coast mangroves	21315	200	20-400	4
41405	IM1405	Sunda Shelf mangroves	37448	250	20-400	3
41406	IM1406	Sundarbans mangroves	20436	350	300-600	2
50201	NA0201	Sonoran-Sinaloan transition subtropical dry forest	50983	1700	1500-2100	4
50301	NA0301	Bermuda subtropical conifer forests	38	167	x	1
50302	NA0302	Sierra Madre Occidental pine-oak forests	222740	4400	3800-4800	2
50303	NA0303	Sierra Madre Oriental pine-oak forests	65633	3300	2500-4500	4
50401	NA0401	Allegheny Highlands forests	83881	1883	x	1
50402	NA0402	Appalachian mixed mesophytic forests	192152	2487	x	1
50403	NA0403	Appalachian/Blue Ridge forests	159266	2398	x	1
50404	NA0404	Central U.S. hardwood forests	296019	2332	x	1
50405	NA0405	East Central Texas forests	52637	1553	x	1
50406	NA0406	Eastern forest/boreal transition	347681	1228	x	1
50407	NA0407	Eastern Great Lakes lowland forests	116417	1381	x	1
50408	NA0408	Gulf of St. Lawrence lowland forests	39415	1033	x	1
50409	NA0409	Mississippi lowland forests	112284	1468	x	1
50410	NA0410	New England/Acadian forests	237594	1496	x	1
50411	NA0411	Northeastern coastal forests	89644	1695	x	1
50412	NA0412	Ozark Mountain forests	62011	1743	x	1
50413	NA0413	Southeastern mixed forests	347798	3363	x	1
50414	NA0414	Southern Great Lakes forests	244469	2243	x	1
50415	NA0415	Upper Midwest Forest/Savanna transition zone	166123	1420	x	1
50416	NA0416	Western Great Lakes forests	273951	1459	x	1
50417	NA0417	Willamette Valley forests	14850	1067	x	1
50501	NA0501	Alberta Mountain forests	39769	660	x	1
50502	NA0502	Alberta/British Columbia foothills forests	120460	740	x	1
50503	NA0503	Arizona Mountains forests	109079	2204	x	1
50504	NA0504	Atlantic coastal pine barrens	8962	632	x	1
50505	NA0505	Blue Mountains forests	64701	1134	x	1
50506	NA0506	British Columbia mainland coastal forests	137212	1325	x	1
50507	NA0507	Cascade Mountains leeward forests	46293	1328	x	1
50508	NA0508	Central and Southern Cascades forests	44850	1296	x	1
50509	NA0509	Central British Columbia Mountain forests	71747	909	x	1
50510	NA0510	Central Pacific coastal forests	73656	1109	x	1
50511	NA0511	Colorado Rockies forests	132739	1626	x	1
50512	NA0512	Eastern Cascades forests	55200	1224	x	1
50513	NA0513	Florida sand pine scrub	3886	951	x	1
50514	NA0514	Fraser Plateau and Basin complex	137055	1012	x	1
50515	NA0515	Great Basin montane forests	5786	1043	x	1
50516	NA0516	Klamath-Siskiyou forests	50299	1859	x	1
50517	NA0517	Middle Atlantic coastal forests	133606	1488	x	1
50518	NA0518	North Central Rockies forests	245687	1695	x	1
50519	NA0519	Northern California coastal forests	13273	1212	x	1
50520	NA0520	Northern Pacific coastal forests	60437	615	x	1
50521	NA0521	Northern transitional alpine forests	25658	876	x	1
50522	NA0522	Okanogan dry forests	53314	1355	x	1
50523	NA0523	Piney Woods forests	140892	1729	x	1
50524	NA0524	Puget lowland forests	22540	1100	x	1
50525	NA0525	Queen Charlotte Islands	9955	459	x	1
50526	NA0526	Sierra Juarez & San Pedro Martir pine-oak forests	4005	1200	900-1600	4
50527	NA0527	Sierra Nevada forests	52832	2373	x	1

50528	NA0528	South Central Rockies forests	159347	1933	x	1
50529	NA0529	Southeastern conifer forests	236608	3095	x	1
50530	NA0530	Wasatch and Uinta montane forests	41465	1109	x	1
50601	NA0601	Alaska Peninsula montane taiga	47803	510	x	1
50602	NA0602	Central Canadian Shield forests	461695	1246	x	1
50603	NA0603	Cook Inlet taiga	27849	738	x	1
50604	NA0604	Copper Plateau taiga	17170	407	x	1
50605	NA0605	Eastern Canadian forests	486866	1140	x	1
50606	NA0606	Eastern Canadian Shield taiga	753777	925	x	1
50607	NA0607	Interior Alaska/Yukon lowland taiga	443328	810	x	1
50608	NA0608	Mid-Continental Canadian forests	367875	613	x	1
50609	NA0609	Midwestern Canadian Shield forests	545896	797	x	1
50610	NA0610	Muskwa/Slave Lake forests	262295	722	x	1
50611	NA0611	Newfoundland Highland forests	16338	473	x	1
50612	NA0612	Northern Canadian Shield taiga	613665	720	x	1
50613	NA0613	Northern Cordillera forests	262780	823	x	1
50614	NA0614	Northwest Territories taiga	345833	576	x	1
50615	NA0615	South Avalon-Burin oceanic barrens	2030	258	x	1
50616	NA0616	Southern Hudson Bay taiga	373725	1178	x	1
50617	NA0617	Yukon Interior dry forests	62370	692	x	1
50701	NA0701	Western Gulf coastal grasslands	80624	2180	2150-2250	1
50801	NA0801	California Central Valley grasslands	55056	1682	x	1
50802	NA0802	Canadian Aspen forests and parklands	397393	1464	x	1
50803	NA0803	Central and Southern mixed grasslands	282139	2081	x	1
50804	NA0804	Central forest/grasslands transition zone	406988	2124	x	1
50805	NA0805	Central tall grasslands	248437	1779	x	1
50806	NA0806	Edwards Plateau savanna	61800	2361	x	1
50807	NA0807	Flint Hills tall grasslands	29612	1174	x	1
50808	NA0808	Montana Valley and Foothill grasslands	81704	1197	x	1
50809	NA0809	Nebraska Sand Hills mixed grasslands	61117	1185	x	1
50810	NA0810	Northern mixed grasslands	218936	1595	x	1
50811	NA0811	Northern short grasslands	638370	1867	x	1
50812	NA0812	Northern tall grasslands	76019	1055	x	1
50813	NA0813	Palouse grasslands	46868	1290	x	1
50814	NA0814	Texas blackland prairies	50256	1531	x	1
50815	NA0815	Western short grasslands	435154	2359	x	1
51101	NA1101	Alaska/St. Elias Range tundra	151790	747	x	1
51102	NA1102	Aleutian Islands tundra	5465	388	x	1
51103	NA1103	Arctic coastal tundra	98164	539	x	1
51104	NA1104	Arctic foothills tundra	129078	580	x	1
51105	NA1105	Baffin coastal tundra	9104	135	x	1
51106	NA1106	Beringia lowland tundra	150932	553	x	1
51107	NA1107	Beringia upland tundra	97348	538	x	1
51108	NA1108	Brooks/British Range tundra	159491	593	x	1
51109	NA1109	Davis Highlands tundra	87876	216	x	1
51110	NA1110	High Arctic tundra	463687	245	x	1
51111	NA1111	Interior Yukon/Alaska alpine tundra	232624	617	x	1
51112	NA1112	Kalaallit Nunaat high arctic tundra	303600	200	100-300	3
51113	NA1113	Kalaallit Nunaat low arctic tundra	171020	480	450-520	3
51114	NA1114	Low Arctic tundra	796523	497	x	1
51115	NA1115	Middle Arctic tundra	1032794	371	x	1
51116	NA1116	Ogilvie/MacKenzie alpine tundra	208448	589	x	1
51117	NA1117	Pacific Coastal Mountain icefields and tundra	106769	792	x	1
51118	NA1118	Torngat Mountain tundra	32287	286	x	1
51201	NA1201	California coastal sage and chaparral	36269	1650	1550-1750	2
51202	NA1202	California interior chaparral and woodlands	64599	2105	x	1
51203	NA1203	California montane chaparral and woodlands	20408	2075	x	1
51301	NA1301	Baja California desert	77712	1900	1500-2200	3
51302	NA1302	Central Mexican matorral	59357	3200	2500-4500	3
51303	NA1303	Chihuahuan desert	509507	3500	3300-3600	1
51304	NA1304	Colorado Plateau shrublands	326390	2556	x	1
51305	NA1305	Great Basin shrub steppe	335868	2519	x	1
51306	NA1306	Gulf of California xeric scrub	23579	1300	900-1900	3
51307	NA1307	Meseta Central matorral	125268	3500	3000-4500	4
51308	NA1308	Mojave desert	130634	2490	x	1
51309	NA1309	Snake/Columbia shrub steppe	218112	2169	x	1
51310	NA1310	Sonoran desert	223009	2700	2600-3000	1
51311	NA1311	Tamaulipan matorral	16271	1900	1500-2500	3
51312	NA1312	Tamaulipan mezquital	141472	1900	1700-2500	3
51313	NA1313	Wyoming Basin shrub steppe	132362	1557	x	1
51401	NA1401	Northwest Mexican Coast mangroves	4985	200	20-400	4
60101	NT0101	Araucaria moist forests	216073	4500	4000-5000	2

60102	NT0102	Atlantic Coast restingas	7870	1500	700-2500	4
60103	NT0103	Bahia coastal forests	109677	5000	4000-6000	3
60104	NT0104	Bahia interior forests	229976	6000	5000-7500	3
60105	NT0105	Bolivian Yungas	90549	6000	5000-8000	2
60106	NT0106	Caatinga Enclaves moist forests	4797	1500	1000-2200	3
60107	NT0107	Caqueta moist forests	184193	9000	7000-11000	3
60108	NT0108	Catatumbo moist forests	8060	1900	1500-2500	3
60109	NT0109	Cauca Valley montane forests	32057	4500	4000-6000	4
60110	NT0110	Cayos Miskitos-San Andres & Providencia moist forests	96	350	150-550	4
60111	NT0111	Central American Atlantic moist forests	89471	4100	3000-5000	3
60112	NT0112	Central American montane forests	13298	3500	2900-4500	3
60113	NT0113	Chiapas montane forests	5778	3800	3000-4500	3
60114	NT0114	Chimalapas montane forests	2084	2500	2000-3000	3
60115	NT0115	Choco-Darien moist forests	73629	9000	7000-10000	2
60116	NT0116	Cocos Island moist forests	25	320	250-400	1
60117	NT0117	Cordillera La Costa montane forests	14342	3700	3000-4500	2
60118	NT0118	Cordillera Oriental montane forests	67873	5500	4000-7000	3
60119	NT0119	Costa Rican seasonal moist forests	10696	3300	2500-4500	4
60120	NT0120	Cuban moist forests	21395	3500	2500-4000	3
60121	NT0121	Eastern Cordillera real montane forests	102497	6500	5500-8000	2
60122	NT0122	Eastern Panamanian montane forests	3044	3300	2500-4000	3
60123	NT0123	Fernanda de Noronha-Atol das Rocas moist forests	19	80	40-150	3
60124	NT0124	Guayanan Highlands moist forests	337587	8000	6500-9000	2
60125	NT0125	Guianan moist forests	512888	8000	7500-9000	1
60126	NT0126	Gurupa varzea	9926	2500	1800-4000	4
60127	NT0127	Hispaniolan moist forests	45954	3800	3300-4300	3
60128	NT0128	Iquitos varzea	115037	3200	2700-4500	2
60129	NT0129	Isthmian-Atlantic moist forests	58912	8000	5000-11000	3
60130	NT0130	Isthmian-Pacific moist forests	29301	6500	5000-8000	3
60131	NT0131	Jamaican moist forests	8296	2800	2500-3100	3
60132	NT0132	Japura-Solimoes-Negro moist forests	269665	8000	5000-10000	3
60133	NT0133	Jurua-Purus moist forests	242564	5000	4000-6500	4
60134	NT0134	Leeward Islands moist forests	989	1500	1400-1900	3
60135	NT0135	Madeira-Tapajos moist forests	719692	6000	4500-7000	4
60136	NT0136	Magdalena Valley montane forests	105061	5500	4000-7000	4
60137	NT0137	Magdalena-Uraba moist forests	76767	4500	3500-5500	4
60138	NT0138	Marajo Varzea forests	88707	3500	2500-4000	4
60139	NT0139	Maranhao Babacu forests	142270	3200	2500-4000	4
60140	NT0140	Mato Grosso tropical dry forests	414005	4000	3500-5000	4
60141	NT0141	Monte Alegre varzea	66803	4500	3000-5000	3
60142	NT0142	Napo moist forests	251729	7000	6000-10000	2
60143	NT0143	Negro-Branco moist forests	212856	6500	5000-8000	3
60144	NT0144	Northeastern Brazil restingas	10056	1000	500-1500	4
60145	NT0145	Northwestern Andean montane forests	81168	6500	5500-7000	2
60146	NT0146	Oaxacan montane forests	7600	3200	2500-3700	3
60147	NT0147	Orinoco Delta swamp forests	28147	1700	1500-2300	4
60148	NT0148	Pantanos de Centla	17209	1900	1500-3000	2
60149	NT0149	Paramaribo swamp forests	7724	700	500-1000	2
60150	NT0150	Parana-Paraiba interior forests	483830	6500	4500-8000	3
60151	NT0151	Pernambuco coastal forests	17576	3000	1500-4000	4
60152	NT0152	Pernambuco interior forests	22693	2500	1500-3500	4
60153	NT0153	Peruvian Yungas	186717	6500	5000-8000	2
60154	NT0154	Peten-Veracruz moist forests	149095	6500	5000-8000	2
60155	NT0155	Puerto Rican moist forests	7528	1800	1700-2100	2
60156	NT0156	Purus varzea	177549	5000	3500-6000	4
60157	NT0157	Purus-Madeira moist forests	174016	5000	3500-6500	4
60158	NT0158	Rio Negro campinarana	80864	3000	2500-5000	4
60159	NT0159	Santa Marta montane forests	4785	1600	900-1900	2
60160	NT0160	Serra do Mar coastal forests	104839	9000	6000-11000	2
60161	NT0161	Sierra de los Tuxtlas	3903	2750	2400-3500	1
60162	NT0162	Sierra Madre de Chiapas moist forest	11259	4100	3500-4700	4
60163	NT0163	Solimoes-Japura moist forest	167659	7000	5500-11000	2
60164	NT0164	South Florida rocklands	2075	1034	x	1
60165	NT0165	Southern Andean Yungas	61126	3500	2500-4000	3
60166	NT0166	Southwest Amazon moist forests	749747	8500	6000-9000	2
60167	NT0167	Talamancan montane forests	16341	8500	6000-11000	2
60168	NT0168	Tapajos-Xingu moist forests	336575	5000	4000-6000	4
60169	NT0169	Tepuis	48844	2900	2300-4000	1
60170	NT0170	Tocantins-Araguaia-Maranhao moist forests	193637	4500	3500-5000	4
60171	NT0171	Trinidad and Tobago moist forests	4742	2100	2000-2300	2
60172	NT0172	Trinidade-Martin Vaz Islands tropical forests	11	120	30-200	4
60173	NT0173	Uatuma-Trombetas moist forests	473119	6500	5500-8000	3

60174	NT0174	Ucayali moist forests	114937	4050	3500-6000	2
60175	NT0175	Venezuelan Andes montane forests	29391	4500	3500-5500	2
60176	NT0176	Veracruz moist forests	69129	6000	4500-7000	3
60177	NT0177	Veracruz montane forests	4957	2700	2200-3500	4
60178	NT0178	Western Ecuador moist forests	34108	5300	4500-7000	1
60179	NT0179	Windward Islands moist forests	2019	1600	1400-1900	2
60180	NT0180	Xingu-Tocantins-Araguaia moist forests	266242	5000	4000-6000	4
60181	NT0181	Yucatan moist forests	69696	1600	1300-1900	2
60201	NT0201	Apure-Villavicencio dry forests	68544	1800	1200-2500	4
60202	NT0202	Atlantic dry forests	115108	2000	1000-3500	4
60203	NT0203	Bahamian dry forests	4796	900	700-1000	2
60204	NT0204	Bajío dry forests	37388	4200	2900-5000	3
60205	NT0205	Balsas dry forests	62445	4300	2500-5100	3
60206	NT0206	Bolivian montane dry forests	80330	900	600-1500	2
60207	NT0207	Cauca Valley dry forests	7345	1000	500-1500	4
60208	NT0208	Cayman Islands dry forests	133	480	400-520	2
60209	NT0209	Central American dry forests	68033	3300	2800-4000	3
60210	NT0210	Chaco	609552	990	900-1200	2
60211	NT0211	Chiapas Depression dry forests	14022	2100	1500-3500	3
60212	NT0212	Chiquitano dry forests	230571	1200	800-1500	2
60213	NT0213	Cuban dry forests	65789	2500	1500-4000	3
60214	NT0214	Ecuadorian dry forests	21284	1250	1000-2500	2
60215	NT0215	Hispaniolan dry forests	15494	1500	1000-2000	3
60216	NT0216	Islas Revillagigedo dry forests	214	110	100-120	1
60217	NT0217	Jalisco dry forests	26130	1500	1000-2500	2
60218	NT0218	Jamaican dry forests	2318	1100	800-1500	3
60219	NT0219	Lara-Falcon dry forests	16939	900	700-1500	3
60220	NT0220	Leeward Islands dry forests	149	200	150-250	3
60221	NT0221	Magdalena Valley dry forests	19637	1300	1000-1900	4
60222	NT0222	Maracaibo dry forests	44999	1500	800-1800	4
60223	NT0223	Maranon dry forests	11372	1400	1000-2000	3
60224	NT0224	Panamanian dry forests	5109	1900	1000-3000	4
60225	NT0225	Patia Valley dry forests	2271	900	500-1500	4
60226	NT0226	Puerto Rican dry forests	1277	900	800-950	2
60227	NT0227	Sierra de la Laguna dry forests	3984	550	500-1000	1
60228	NT0228	Sinaloan dry forests	77534	2100	1700-2500	2
60229	NT0229	Sinu Valley dry forests	24983	1100	1000-1500	4
60230	NT0230	Southern Pacific dry forests	42427	4000	2500-5100	3
60231	NT0231	Trinidad and Tobago dry forests	271	600	300-1000	3
60232	NT0232	Tumbes-Piura dry forests	41283	800	600-1000	2
60233	NT0233	Veracruz dry forests	6636	1100	900-2000	4
60234	NT0234	Windward Islands dry forests	491	450	250-650	3
60235	NT0235	Yucatan dry forests	49767	1150	1000-1300	2
60301	NT0301	Bahamian pine forests	2090	750	500-900	3
60302	NT0302	Belizian pine forests	2832	1500	1000-2500	4
60303	NT0303	Central American pine-oak forests	111351	4900	4000-6000	3
60304	NT0304	Cuban pine forests	6423	1500	800-2200	4
60305	NT0305	Hispaniolan pine forests	11596	2200	1800-2800	3
60306	NT0306	Miskito pine forests	18912	1800	1400-2500	4
60307	NT0307	Sierra de la Laguna pine-oak forests	1064	800	700-1200	1
60308	NT0308	Sierra Madre de Oaxaca pine-oak forests	14346	3100	2500-3700	2
60309	NT0309	Sierra Madre del Sur pine-oak forests	61175	4200	3600-5000	3
60310	NT0310	Trans-Mexican Volcanic Belt pine-oak forests	91823	4900	4000-6000	3
60401	NT0401	Juan Fernandez Islands temperate forests	146	225	212-225	1
60402	NT0402	Magellanic subpolar forests	147247	450	400-650	3
60403	NT0403	San Felix-San Ambrosio Islands temperate forests	6	22	22-23	1
60404	NT0404	Valdivian temperate forests	248087	800	600-1000	2
60701	NT0701	Arid Chaco	98857	600	500-800	3
60702	NT0702	Beni savanna	126065	1500	1500-5000	1
60703	NT0703	Campos Rupestres montane savanna	26395	1500	1000-2000	3
60704	NT0704	Cerrado	1916881	6500	6500-8000	1
60705	NT0705	Clipperton Island shrub and grasslands	7	30	15-31	1
60706	NT0706	Cordoba montane savanna	58153	400	200-600	3
60707	NT0707	Guyanan savanna	104356	1200	700-2000	4
60708	NT0708	Humid Chaco	334751	1100	800-1500	3
60709	NT0709	Llanos	388998	2600	2000-3000	2
60710	NT0710	Uruguayan savanna	355674	2500	2000-2700	2
60801	NT0801	Argentine Espinal	108810	700	500-1000	4
60802	NT0802	Argentine Monte	409038	700	500-1000	1
60803	NT0803	Humid Pampas	240794	1750	1500-2000	2
60804	NT0804	Patagonian grasslands	63165	550	450-700	2
60805	NT0805	Patagonian steppe	487249	1200	1100-1200	2

60806	NT0806	Semi-arid Pampas	327010	1300	1000-1800	2
60901	NT0901	Central Mexican wetlands	280	300	100-600	4
60902	NT0902	Cuban wetlands	5663	900	600-1500	4
60903	NT0903	Enriquillo wetlands	630	400	200-700	4
60904	NT0904	Everglades	20066	1362	x	1
60905	NT0905	Guayaquil flooded grasslands	2937	1050	800-1400	3
60906	NT0906	Orinoco wetlands	6013	1100	900-1600	3
60907	NT0907	Pantanal	171054	1700	1500-2000	1
60908	NT0908	Parana flooded savanna	38868	1400	1200-1600	4
60909	NT0909	Southern Cone Mesopotamian savanna	77634	1400	1200-2000	4
61001	NT1001	Central Andean dry puna	307377	1100	900-1400	4
61002	NT1002	Central Andean puna	161410	1200	1000-1500	2
61003	NT1003	Central Andean wet puna	117318	1300	1100-1500	2
61004	NT1004	Cordillera Central paramo	12174	1500	1000-2000	2
61005	NT1005	Cordillera de Merida paramo	2810	700	400-1000	3
61006	NT1006	Northern Andean paramo	29969	2500	2000-3500	2
61007	NT1007	Santa Marta paramo	1244	800	400-1000	2
61008	NT1008	Southern Andean steppe	178235	800	600-1200	4
61009	NT1009	Zacatonal	302	200	150-500	1
61201	NT1201	Chilean matorral	148509	2600	2300-3000	2
61301	NT1301	Araya and Paria xeric scrub	5283	1400	1200-2000	2
61302	NT1302	Aruba-Curacao-Bonaire cactus scrub	458	450	400-800	2
61303	NT1303	Atacama desert	105174	800	600-1000	2
61304	NT1304	Caatinga	734406	1500	1200-2000	1
61305	NT1305	Cayman Islands xeric scrub	23	320	100-400	3
61306	NT1306	Cuban cactus scrub	3265	900	500-1300	4
61307	NT1307	Galapagos Islands xeric scrub	8014	541	541	1
61308	NT1308	Guajira-Barranquilla xeric scrub	31605	900	500-1500	3
61309	NT1309	La Costa xeric shrublands	68465	1700	1500-2000	3
61310	NT1310	Leeward Islands xeric scrub	1644	800	600-1000	2
61311	NT1311	Malpelo Island xeric scrub	8	80	20-300	4
61312	NT1312	Motagua Valley thornscrub	2337	1400	600-1800	4
61313	NT1313	Paraguana xeric scrub	15974	1200	800-1500	4
61314	NT1314	San Lucan xeric scrub	3877	550	400-800	4
61315	NT1315	Sechura desert	184915	1050	600-1200	2
61316	NT1316	Tehuacan Valley matorral	9892	2700	2500-3100	2
61317	NT1317	Windward Islands xeric scrub	1028	650	600-800	2
61318	NT1318	St. Peter and St. Paul rocks	8	0	x	1
61401	NT1401	Alvarado mangroves	4546	200	20-400	4
61402	NT1402	Amapa mangroves	1562	200	20-400	4
61403	NT1403	Bahamian mangroves	6615	200	20-400	4
61404	NT1404	Bahia mangroves	2119	200	20-400	4
61405	NT1405	Belizean Coast mangroves	2795	200	20-400	4
61406	NT1406	Belizean Reef mangroves	236	200	20-400	4
61407	NT1407	Bocas del Toro-San Bastimentos Island-San Blas mangroves	541	200	20-400	4
61408	NT1408	Coastal Venezuelan mangroves	5845	200	20-400	4
61409	NT1409	Esmeraldes-Pacific Colombia mangroves	6518	200	20-400	4
61410	NT1410	Greater Antilles mangroves	10645	200	20-400	4
61411	NT1411	Guianan mangroves	14570	200	20-400	4
61412	NT1412	Gulf of Fonseca mangroves	1624	200	20-400	4
61413	NT1413	Gulf of Guayaquil-Tumbes mangroves	3314	200	20-400	4
61414	NT1414	Gulf of Panama mangroves	2424	200	20-400	4
61415	NT1415	Ilha Grande mangroves	3206	200	20-400	4
61416	NT1416	Lesser Antilles mangroves	651	200	20-400	4
61417	NT1417	Magdalena-Santa Marta mangroves	3195	200	20-400	4
61418	NT1418	Manabi mangroves	1149	200	20-400	4
61419	NT1419	Maranhao mangroves	11309	200	20-400	4
61420	NT1420	Marismas Nacionales-San Blas mangroves	2040	200	20-400	4
61421	NT1421	Mayan Corridor mangroves	4091	200	20-400	4
61422	NT1422	Mexican South Pacific Coast mangroves	1173	200	20-400	4
61423	NT1423	Moist Pacific Coast mangroves	1598	200	20-400	4
61424	NT1424	Mosquita-Nicaraguan Caribbean Coast mangroves	4437	200	20-400	4
61425	NT1425	Northern Dry Pacific Coast mangroves	1057	200	20-400	4
61426	NT1426	Northern Honduras mangroves	1054	200	20-400	4
61427	NT1427	Para mangroves	4413	200	20-400	4
61428	NT1428	Petenes mangroves	1977	200	20-400	4
61429	NT1429	Piura mangroves	117	200	20-400	4
61430	NT1430	Rio Lagartos mangroves	3466	200	20-400	4
61431	NT1431	Rio Negro-Rio San Sun mangroves	478	200	20-400	4
61432	NT1432	Rio Piranhas mangroves	2114	200	20-400	4
61433	NT1433	Rio Sao Francisco mangroves	2617	200	20-400	4
61434	NT1434	Southern Dry Pacific Coast mangroves	906	200	20-400	4

61435	NT1435	Tehuantepec-El Manchon mangroves	2695	200	20-400	4
61436	NT1436	Trinidad mangroves	187	200	20-400	4
61437	NT1437	Usumacinta mangroves	3130	200	20-400	4
70101	OC0101	Carolines tropical moist forests	575	1150	1100-1200	2
70102	OC0102	Central Polynesian tropical moist forests	614	50	40-60	2
70103	OC0103	Cook Islands tropical moist forests	214	130	120-280	2
70104	OC0104	Eastern Micronesia tropical moist forests	515	110	90-150	2
70105	OC0105	Fiji tropical moist forests	11621	1450	1400-1600	2
70106	OC0106	Hawaii tropical moist forests	6737	935	x	1
70107	OC0107	Kermadec Islands subtropical moist forests	34	113	x	1
70108	OC0108	Marquesas tropical moist forests	1077	318	x	1
70109	OC0109	Ogasawara subtropical moist forests	96	500	450-550	2
70110	OC0110	Palau tropical moist forests	464	175	x	1
70111	OC0111	Rapa Nui - Sala-y-Gomez subtropical broadleaf forests	178	30	29-33	1
70112	OC0112	Samoan tropical moist forests	3093	775	775	1
70113	OC0113	Society Islands tropical moist forests	1624	623	x	1
70114	OC0114	Tongan tropical moist forests	933	480	450-520	2
70115	OC0115	Tuamotu tropical moist forests	948	140	120-160	2
70116	OC0116	Tubuai tropical moist forests	144	150	120-300	2
70117	OC0117	Western Polynesian tropical moist forests	93	50	44-60	2
70201	OC0201	Fiji tropical dry forests	6913	500	420-700	3
70202	OC0202	Hawaii tropical dry forests	6633	659	x	1
70203	OC0203	Marianas tropical dry forests	1036	400	340-500	2
70204	OC0204	Yap tropical dry forests	101	120	50-250	3
70701	OC0701	Hawaii tropical high shrublands	1852	124	x	1
70702	OC0702	Hawaii tropical low shrublands	1521	384	x	1
70703	OC0703	Northwestern Hawaii scrub	15	30	15-80	3
80101	PA0101	Gizhou Plateau broadleaf and mixed forests	269541	3500	2500-5000	3
80102	PA0102	Yunnan Plateau subtropical evergreen forests	240343	6000	5300-8000	2
80401	PA0401	Appenine deciduous montane forests	16120	2500	2200-2800	3
80402	PA0402	Atlantic mixed forests	399124	1900	1700-2200	3
80403	PA0403	Azores temperate mixed forests	2615	510	490-600	2
80404	PA0404	Balkan mixed forests	224367	3500	3200-4000	3
80405	PA0405	Baltic mixed forests	116579	1700	1500-2000	2
80406	PA0406	Cantabrian mixed forests	79710	2000	1800-2200	2
80407	PA0407	Caspian Hyrcanian mixed forests	55107	2000	1300-3000	3
80408	PA0408	Caucasus mixed forests	170277	5000	4700-5300	2
80409	PA0409	Celtic broadleaf forests	209130	1600	1300-1900	2
80410	PA0410	Central Anatolian deciduous forests	101412	2000	1200-2800	3
80411	PA0411	Central China loess plateau mixed forests	359624	3100	2800-3400	3
80412	PA0412	Central European mixed forests	731222	2300	1800-2800	3
80413	PA0413	Central Korean deciduous forests	104558	2000	1700-2500	3
80414	PA0414	Changbai Mountains mixed forests	93298	2500	2200-2800	2
80415	PA0415	Changjiang Plain evergreen forests	438022	3000	2500-4000	3
80416	PA0416	Crimean Submediterranean forest complex	30149	2600	2300-3000	2
80417	PA0417	Daba Mountains evergreen forests	168303	4500	3500-6000	3
80418	PA0418	Dinaric Mountains mixed forests	58166	3700	3200-4200	3
80419	PA0419	East European forest steppe	727155	1900	1600-2200	2
80420	PA0420	Eastern Anatolian deciduous forests	81564	2800	2400-3200	3
80421	PA0421	English Lowlands beech forests	45596	1300	1250-1400	2
80422	PA0422	Euxine-Colchic deciduous forests	74412	3200	2800-3600	3
80423	PA0423	Hokkaido deciduous forests	25535	1200	800-1800	4
80424	PA0424	Huang He Plain mixed forests	434199	2800	2300-3300	2
80425	PA0425	Madeira evergreen forests	815	760	x	1
80426	PA0426	Manchurian mixed forests	504011	2200	2000-2500	2
80427	PA0427	Nihonkai evergreen forests	21632	1700	1000-2500	4
80428	PA0428	Nihonkai montane deciduous forests	82301	2500	2000-3000	3
80429	PA0429	North Atlantic moist mixed forests	38650	600	400-800	3
80430	PA0430	Northeast China Plain deciduous forests	232452	1800	1500-2200	3
80431	PA0431	Pannonian mixed forests	306893	2700	2400-3000	2
80432	PA0432	Po Basin mixed forests	42363	1200	800-1600	4
80433	PA0433	Pyrenees conifer and mixed forests	25886	3300	3000-3500	2
80434	PA0434	Qin Ling Mountains deciduous forests	123327	3400	3100-3700	2
80435	PA0435	Rodope montane mixed forests	31635	3000	2500-3500	2
80436	PA0436	Sarmatic mixed forests	846110	1800	1500-2100	2
80437	PA0437	Sichuan Basin evergreen broadleaf forests	98117	3000	2000-5000	3
80438	PA0438	South Sakhalin-Kurile mixed forests	12532	1000	900-1100	2
80439	PA0439	Southern Korea evergreen forests	14726	2300	1900-2600	3
80440	PA0440	Taiheiyo evergreen forests	138298	3000	2400-4000	4
80441	PA0441	Taiheiyo montane deciduous forests	41905	2700	2000-3400	4
80442	PA0442	Tarim Basin deciduous forests and steppe	54472	600	400-900	4
80443	PA0443	Ussuri broadleaf and mixed forests	197427	1800	1500-2100	2

80444	PA0444	West Siberian broadleaf and mixed forests	223406	1200	900-1500	3
80445	PA0445	Western European broadleaf forests	492329	2900	2500-3300	2
80446	PA0446	Zagros Mountains forest steppe	397761	1800	1200-2500	3
80501	PA0501	Alps conifer and mixed forests	149481	5000	4500-5500	2
80502	PA0502	Altai montane forest and forest steppe	142445	2000	1700-2300	3
80503	PA0503	Caledon conifer forests	22000	500	300-800	3
80504	PA0504	Carpathian montane conifer forests	124964	2700	2500-3000	2
80505	PA0505	Da Hinggan-Dzhagdy Mountains conifer forests	248308	800	700-1000	2
80506	PA0506	East Afghan montane conifer forests	20084	1300	800-1800	4
80507	PA0507	Elburz Range forest steppe	63265	700	500-1000	4
80508	PA0508	Helanshan montane conifer forests	24685	700	600-800	3
80509	PA0509	Hengduan Mountains subalpine conifer forests	99421	3000	2000-4000	3
80510	PA0510	Hokkaido montane conifer forests	45765	1400	1000-2000	3
80511	PA0511	Honshu alpine conifer forests	11495	1300	800-2000	3
80512	PA0512	Khangai Mountains conifer forests	2893	1200	1000-1400	2
80513	PA0513	Mediterranean conifer and mixed forests	23358	2300	1800-2800	3
80514	PA0514	Northeastern Himalayan subalpine conifer forests	46277	2500	1800-3500	3
80515	PA0515	Northern Anatolian conifer and deciduous forests	101290	2200	1500-3000	3
80516	PA0516	Nujiang Langcang Gorge alpine conifer and mixed forests	82809	3500	2500-5000	3
80517	PA0517	Qilian Mountains conifer forests	16652	1500	1000-2000	3
80518	PA0518	Qionglai-Minshan conifer forests	80216	5000	4000-6000	3
80519	PA0519	Sayan montane conifer forests	357394	1200	1000-1600	2
80520	PA0520	Scandinavian coastal conifer forests	19283	600	400-1000	3
80521	PA0521	Tian Shan montane conifer forests	27519	1500	1000-2000	3
80601	PA0601	East Siberian taiga	3899749	1400	1200-1600	2
80602	PA0602	Iceland boreal birch forests and alpine tundra	91464	377	377	1
80603	PA0603	Kamchatka-Kurile meadows and sparse forests	146380	700	600-800	3
80604	PA0604	Kamchatka-Kurile taiga	15220	500	400-700	3
80605	PA0605	Northeast Siberian taiga	1125724	800	650-900	2
80606	PA0606	Okhotsk-Manchurian taiga	401936	1100	900-1300	3
80607	PA0607	Sakhalin Island taiga	68697	600	500-800	3
80608	PA0608	Scandinavian and Russian taiga	2156918	1400	1200-1600	2
80609	PA0609	Trans-Baikal conifer forests	200451	1000	900-1200	2
80610	PA0610	Urals montane tundra and taiga	174588	1600	1400-1800	2
80611	PA0611	West Siberian taiga	1670381	900	700-1200	2
80801	PA0801	Alai-Western Tian Shan steppe	127516	2100	2000-2400	2
80802	PA0802	Altai steppe and semi-desert	82935	1200	800-1600	4
80803	PA0803	Central Anatolian steppe	24914	1000	500-1500	4
80804	PA0804	Daurian forest steppe	208918	1200	900-1500	3
80805	PA0805	Eastern Anatolian montane steppe	168246	2500	2300-3000	3
80806	PA0806	Emin Valley steppe	64968	1500	1000-2000	4
80807	PA0807	Faroe Islands boreal grasslands	1447	327	x	1
80808	PA0808	Gissaro-Alai open woodlands	167988	3500	2800-4000	2
80809	PA0809	Kazakh forest steppe	420460	1200	1100-1300	2
80810	PA0810	Kazakh steppe	804451	1800	1500-2000	2
80811	PA0811	Kazakh upland	71947	1000	800-1300	3
80812	PA0812	Middle East steppe	132292	1400	800-2000	4
80813	PA0813	Mongolian-Manchurian grassland	887292	1200	1000-1400	2
80814	PA0814	Pontic steppe	994014	2800	2600-3200	2
80815	PA0815	Sayan Intermontane steppe	33929	700	400-1000	3
80816	PA0816	Selenge-Orkhon forest steppe	227636	1000	700-1400	4
80817	PA0817	South Siberian forest steppe	161858	1300	1100-1600	2
80818	PA0818	Tian Shan foothill arid steppe	128992	1700	1200-2500	3
80901	PA0901	Amur meadow steppe	123234	900	600-1400	4
80902	PA0902	Bohai Sea saline meadow	11557	300	100-500	4
80903	PA0903	Nenjiang River grassland	23199	600	400-1000	4
80904	PA0904	Nile Delta flooded savanna	50524	800	500-1100	3
80905	PA0905	Saharan halophytics	53950	100	50-200	3
80906	PA0906	Tigris-Euphrates alluvial salt marsh	35602	400	200-700	4
80907	PA0907	Ussuri-Wusuli meadow and forest meadow	33759	1000	600-1400	3
80908	PA0908	Yellow Sea saline meadow	5322	300	100-500	4
81001	PA1001	Altai alpine meadow and tundra	90151	1800	1300-2300	3
81002	PA1002	Central Tibetan Plateau alpine steppe	629464	1000	700-1300	3
81003	PA1003	Eastern Himalayan alpine shrub and meadows	121186	1500	1000-2000	4
81004	PA1004	Ghorat-Hazarajat alpine meadow	66495	1200	800-1500	4
81005	PA1005	Hindu Kush alpine meadow	28261	800	500-1100	3
81006	PA1006	Karakoram-West Tibetan Plateau alpine steppe	143281	1500	1200-1700	2
81007	PA1007	Khangai Mountains alpine meadow	37062	500	300-800	3
81008	PA1008	Kopet Dag woodlands and forest steppe	58285	1800	1700-2000	2
81009	PA1009	Kuhrud-Kohbanan Mountains forest steppe	126342	1500	1000-2000	4
81010	PA1010	Mediterranean High Atlas juniper steppe	6332	1000	800-1200	2
81011	PA1011	North Tibetan Plateau-Kunlun Mountains alpine desert	374427	800	600-1000	3

81012	PA1012	Northwestern Himalayan alpine shrub and meadows	49405	1500	1200-1700	3
81013	PA1013	Ordos Plateau steppe	215466	1100	900-1300	3
81014	PA1014	Pamir alpine desert and tundra	117989	900	700-1100	2
81015	PA1015	Qilian Mountains subalpine meadow	73229	900	500-1400	4
81016	PA1016	Sayan Alpine meadow and tundra	80898	1000	600-1500	3
81017	PA1017	Southeast Tibet shrublands and meadow	460818	2500	1500-4000	3
81018	PA1018	Sulaiman Range alpine meadows	23869	800	400-1200	3
81019	PA1019	Tian Shan montane steppe and meadow	280130	3000	2500-3500	2
81020	PA1020	Tibetan Plateau alpine shrublands and meadows	272121	1400	900-1800	3
81021	PA1021	Western Himalayan alpine shrub and Meadows	70164	1500	1000-2000	3
81022	PA1022	Yarlung Zambo arid steppe	59459	1000	500-1700	4
81101	PA1101	Arctic desert	161431	200	160-230	2
81102	PA1102	Bering tundra	474246	950	850-1100	2
81103	PA1103	Cherskii-Kolyma mountain tundra	556708	450	350-600	3
81104	PA1104	Chukchi Peninsula tundra	298361	950	800-1100	2
81105	PA1105	Kamchatka Mountain tundra and forest tundra	119299	300	200-500	3
81106	PA1106	Kola Peninsula tundra	58758	500	400-600	3
81107	PA1107	Northeast Siberian coastal tundra	222579	550	500-650	2
81108	PA1108	Northwest Russian-Novaya Zemlya tundra	284227	550	450-650	2
81109	PA1109	Novosibirsk Islands arctic desert	36943	120	100-150	2
81110	PA1110	Scandinavian Montane Birch forest and grasslands	243238	1000	800-1200	3
81111	PA1111	Taimyr-Central Siberian tundra	954703	650	550-750	2
81112	PA1112	Trans-Baikal Bald Mountain tundra	217566	500	300-700	3
81113	PA1113	Wrangel Island arctic desert	7542	387	387	1
81114	PA1114	Yamalagydanskaja tundra	412099	450	350-550	2
81201	PA1201	Aegean & Western Turkey sclerophyllous and mixed forests	133458	2500	2000-3000	3
81202	PA1202	Anatolian conifer and deciduous mixed forests	86319	2400	1800-3000	3
81203	PA1203	Canary Islands dry woodlands and forests	4973	1130	1050-1200	2
81204	PA1204	Corsican montane broadleaf and mixed forests	3628	1800	1600-2100	3
81205	PA1205	Crete Mediterranean forests	8193	1600	1500-1700	2
81206	PA1206	Cyprus Mediterranean forests	9273	1500	1000-1700	2
81207	PA1207	Eastern Mediterranean conifer-sclerophyllous-broadleaf forests	143838	3200	2700-3800	3
81208	PA1208	Iberian conifer forests	34424	3200	3000-3500	3
81209	PA1209	Iberian sclerophyllous and semi-deciduous forests	297650	2500	2100-2900	2
81210	PA1210	Illyrian deciduous forests	40573	2800	2200-3500	3
81211	PA1211	Italian sclerophyllous and semi-deciduous forests	102047	3300	3000-3600	3
81212	PA1212	Mediterranean acacia-argania dry woodlands and succulent thickets	100524	1600	1200-2000	3
81213	PA1213	Mediterranean dry woodlands and steppe	291667	1200	900-1400	3
81214	PA1214	Mediterranean woodlands and forests	357943	1500	1000-2000	3
81215	PA1215	Northeastern Spain & Southern France Mediterranean forests	90697	2800	2200-3400	3
81216	PA1216	Northwest Iberian montane forests	57322	1400	1000-1800	4
81217	PA1217	Pindus Mountains mixed forests	39538	4000	3200-4500	3
81218	PA1218	South Appenine mixed montane forests	13083	2100	1700-2500	4
81219	PA1219	Southeastern Iberian shrubs and woodlands	2867	400	300-700	3
81220	PA1220	Southern Anatolian montane conifer and deciduous forests	76450	4000	3500-4500	2
81221	PA1221	Southwest Iberian Mediterranean sclerophyllous and mixed forests	71077	2600	2300-2900	2
81222	PA1222	Tyrrhenian-Adriatic Sclerophyllous and mixed forests	85000	3300	3000-3600	3
81301	PA1301	Afghan Mountains semi-desert	13683	600	400-1000	4
81302	PA1302	Alashan Plateau semi-desert	673397	700	500-900	2
81303	PA1303	Arabian Desert and East Sahero-Arabian xeric shrublands	1851340	900	600-1200	3
81304	PA1304	Atlantic coastal desert	39891	300	200-500	3
81305	PA1305	Azerbaijan shrub desert and steppe	64015	1500	1000-2000	3
81306	PA1306	Badkhiz-Karabil semi-desert	133607	1100	1000-1300	2
81307	PA1307	Baluchistan xeric woodlands	288749	2000	1500-2700	3
81308	PA1308	Caspian lowland desert	267291	700	500-1000	3
81309	PA1309	Central Afghan Mountains xeric woodlands	139397	1700	1000-2400	3
81310	PA1310	Central Asian northern desert	662391	800	700-1000	3
81311	PA1311	Central Asian riparian woodlands	88631	900	700-1200	2
81312	PA1312	Central Asian southern desert	566691	900	800-1100	2
81313	PA1313	Central Persian desert basins	580892	1300	1100-1500	2
81314	PA1314	Eastern Gobi desert steppe	281806	400	200-700	3
81315	PA1315	Gobi Lakes Valley desert steppe	139384	400	200-700	4
81316	PA1316	Great Lakes Basin desert steppe	157209	600	550-900	3
81317	PA1317	Junggar Basin semi-desert	304203	1200	700-1700	4
81318	PA1318	Kazakh semi-desert	678389	800	600-1200	3
81319	PA1319	Kopet Dag semi-desert	26268	700	500-1000	4
81320	PA1320	Mesopotamian shrub desert	210974	1100	800-1500	3
81321	PA1321	North Saharan steppe and woodlands	1675268	1150	1100-1200	1
81322	PA1322	Paropamisus xeric woodlands	92594	1300	800-1800	3
81323	PA1323	Persian Gulf desert and semi-desert	72640	350	300-400	2
81324	PA1324	Qaidam Basin semi-desert	192042	250	200-500	2
81325	PA1325	Red Sea Nubo-Sindian tropical desert and semi-desert	651263	900	700-1100	3

81326	PA1326	Registan-North Pakistan sandy desert	277298	700	400-1000	4
81327	PA1327	Sahara desert	4639920	500	450-550	1
81328	PA1328	South Iran Nubo-Sindian desert and semi-desert	351453	900	500-1300	4
81329	PA1329	South Saharan steppe and woodlands	1101734	500	400-700	3
81330	PA1330	Taklimakan desert	741857	400	200-800	3
81331	PA1331	Tibesti-Jebel Uweinat montane xeric woodlands	82237	580	570-620	2
81332	PA1332	West Saharan montane xeric woodlands	258071	550	500-700	2

Appendix S3 Ecoregions with highest species richness in each combination of biome (row) and biogeographic realm (column). This table corresponds to figure 1b of the manuscript. After each name, the ecoregion ID is given in parentheses. This is followed by the working figure of species number and (in brackets) the suitability and quality of underlying data (ranging from 1 = good to 4 = very poor). Note that some cells are empty because for these combinations, no ecoregions exist (e.g., there are no Boreal forests in the Antarctic). In each biome, the ecoregion highest in species richness is given in bold face. Ecoregions for which the suitability and quality of underlying data was very poor are given in italics. An asterisk (*) indicates ecoregions which are the only representatives of the respective combination of biome and realm. The symbol (+) indicates ecoregions which are not part of a WWF Global 200 region.

	Australasia	Antarctic	Afrotropics	IndoMalay	Nearctic	Neotropics	Oceania	Palearctic
Tropical & Subtropical Moist Broadleaf Forests	Central Range montane rain forests (10105): 7500 [2]		Madagascar lowland forests (30117): 6000 [2], 112640 km²	**Borneo lowland rain forests (40102): 10000 [3]**		Choco-Darien moist forests (60115): 9000 [2], 73629 km²;	Fiji tropical moist forests (70105): 1450 [2]	Yunnan Plateau subtropical evergreen forests (80102): 6000 [2]
Tropical & Subtropical Dry Broadleaf Forests	Lesser Sundas deciduous forests (10201): 2500 [3]		Madagascar dry deciduous forests (30202): 2100 [2]	Southeastern Indochina dry evergreen forests (40210): 4000 [3]	**Sonoran-Sinaloan transition subtropical dry forest (50201): 1700 [4]*	**Balsas dry forests (60205): 4300 [3]**	Hawaii tropical dry forests (70202): 659 [1]	
Tropical & Subtropical Coniferous Forests				Luzon tropical pine forests (40302): 1300 [3]	Sierra Madre Occidental pine-oak forests (50302): 4400 [2]	**Trans-Mexican Volcanic Belt pine-oak forests (60310): 4900 [3], 91823**		
Temperate Broadleaf & Mixed Forests	Eastern Australian temperate forests (10402): 3700 [3]			Eastern Himalayan broadleaf forests (40401): 4500 [3]	Southeastern mixed forests (50413): 3363 [1]	Valdivian temperate forests (60404): 800 [2]		**Caucasus mixed forests (80408): 5000 [2]**
Temperate Conifer Forests				Eastern Himalayan subalpine conifer forests (40501): 2000 [3]	Southeastern conifer forests (50529): 3095 [1]			**Qionglai-Minshan conifer forests (80518): 5000 [3], 80216 km²;**
Boreal Forests / Taiga					+Central Canadian Shield forests (50602): 1246 [1]			**Urals montane tundra and taiga (80610): 1600 [2]**
Tropical & Subtropical Grasslands, Savannas & Shrublands	Cape York tropical savanna (10703): 3100 [2]		Central Zambezian Miombo woodlands (30704): 3800 [3]	*Terai-Duar savanna and grasslands (40701): 1000 [3]	+*Western Gulf coastal grasslands (50701): 2180 [1]	**Cerrado (60704): 6500 [1]**	Hawaii tropical low shrublands (70702): 384 [1]	
Temperate Grasslands, Savannas & Shrublands	+*Southeast Australia temperate savanna (10803): 900 [4]*		Al Hajar Al Gharbi montane woodlands (30801): 700 [3]		+Edwards Plateau savanna (50806): 2361 [1]	+Humid Pampas (60803): 1750 [2]		**Gissaro-Alai open woodlands (80808): 3500 [2]**
Flooded Grasslands & Savannas			*Zambezian flooded grasslands (30907): 1400 [4]*	*Rann of Kutch seasonal salt marsh (40901): 800 [3]		**Pantanal (60907): 1700 [1]**		+Ussuri-Wusuli meadow and forest meadow (80907): 1000 [3]

	Australasia	Antarctic	Afrotropics	IndoMalay	Nearctic	Neotropics	Oceania	Palearctic
Montane Grasslands & Shrublands	Central Range sub-alpine grasslands (11002): 1800 [3]		Drakensberg montane grasslands, woodlands and forests (31004): 3700 [2]	***Kinabalu montane alpine meadows (41001): 3800 [2]**		Northern Andean paramo (61006): 2500 [2]		Tian Shan montane steppe and meadow (81019): 3000 [2]
Tundra	+*Antipodes Subantarctic Islands tundra (11101): 240 [1]	+Southern Indian Ocean Island tundra (21104): 35 [2]			+Pacific Coastal Mountain icefields and tundra (51117): 792 [1]			**Scandinavian Montane Birch forest and grasslands (81110): 1000 [3]**
Mediterranean Forests, Woodlands & Scrub	Esperance mallee (11202): 2900 [3]		**Montane fynbos and renosterveld (31203): 6300 [2]**		California interior chaparral and woodlands (51202): 2105 [1]	*Chilean matorral (61201): 2600 [2]		Pindus Mountains mixed forests (81217): 4000 [3], 39538 km²;
Deserts & Xeric Shrublands	Central Ranges xeric scrub (11302): 1400 [2]		**Succulent Karoo (31322): 4850 [2]**	+Deccan thorn scrub forests (41301): 1300 [2]	Chihuahuan desert (51303): 3500 [1], 509507 km²;	Tehuacan Valley matorral (61316): 2700 [2]		+Baluchistan xeric woodlands (81307): 2000 [3]
Mangroves	**New Guinea mangroves (11401): 250 [4]*		*not given because of poor data basis*	**Sundarbans mangroves (41406): 350 [2]**	+**Northwest Mexican Coast mangroves (51401): 200 [4]*	*not given because of poor data basis*		