

SHARING A WORLD OF DIFFERENCE

*the earth's linguistic,
cultural, and biological
diversity.*

SHARING A WORLD OF DIFFERENCE *the earth's linguistic, cultural, and biological diversity*
Mise en page : Atelier Michel Bouvet / Odile Chambaut - Illustration : Ariando Maia Tene, Charlotte Breteche, Odile Chambaut - Couverture Odile Chambaut



Editorial Coordination : Linda King

Principal authors : Tove Skutnabb-Kangas, Luisa Maffi, David Harmon.

Acknowledgments. Colin Baker, David Klaus and Edward Williams granted permission to use quotes from their writings and the Southwest Journal of Linguistics to reproduce David Harmon's graphs (Figures 1 and 2). Ulla Aikio-Puoskari and Satu Moshnikoff provided information on Skolt Saami. Kari Torikka allowed reproduction of the photo from the Skolt Saami classroom. Anthea Fallen-Bailey supplied geographic and demographic figures on New Guinea. The research involved in the preparation of the map and booklet was supported in part by a Ford Foundation grant to Terralingua.

The drawings of pakm trees were made by Arlindo Maia Tene, an indigenous forestry worker of the western Amazon of Brazil. They were reproduced from the publication Forest and Management edited in 2002 by The Pro-Indigenous Commission and The Brazilian Minister of the Environment.

SHARING A WORLD OF DIFFERENCE

*the earth's
linguistic,
cultural,
and biological
diversity*



The authors are responsible for the choice and presentation of the facts contained in this work and for the opinions expressed therein, which are not necessarily those of UNESCO and do not commit the Organization.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of UNESCO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Any part of this publication may be freely reproduced with the appropriate acknowledgement.

© UNESCO - Terralingua - World Wide Fund for Nature 2003
United Nations Educational Scientific and Cultural Organization
7, place de Fontenoy - Paris 75007

Preface Globalization has made us increasingly aware of both the unity and the diversity of our planet. The growth of the information society has permitted global communication in ways that would have been unthinkable a mere decade ago, but it also presents dangers of cultural and linguistic homogenisation. The expansion of the global economy has fostered migration from small rural communities to large urban centres, as well as from country to country, further blurring the distinct identities of local communities.

The interlinkages between linguistic, cultural and biological diversity, framed in this booklet as biocultural diversity, emphasize the need to be aware of the complex relationships which underpin the sustainable development of our contemporary world for future generations. It is here that education has a crucial role to play.

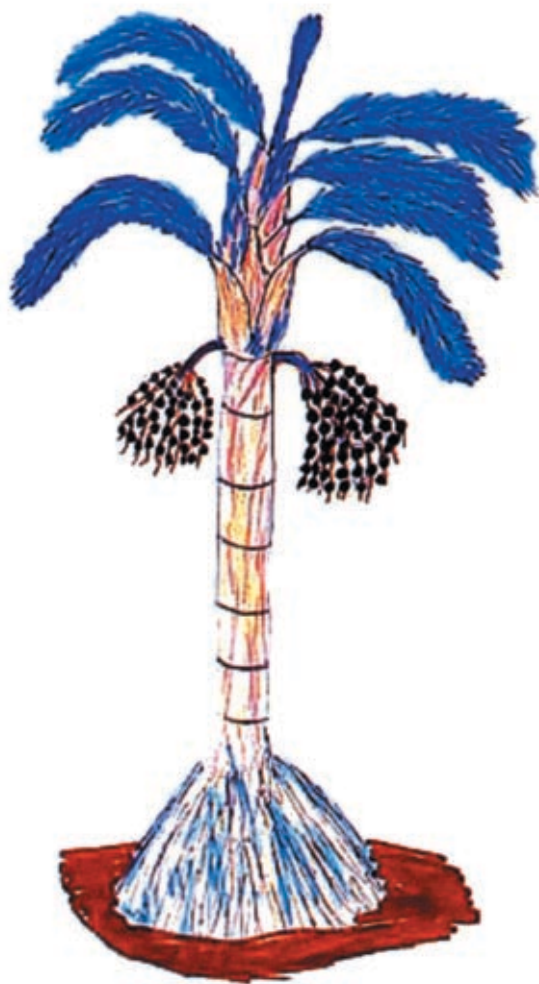
By teaching people about the interaction between environments, cultures and languages, we help prepare citizens who are alert to the need to preserve humanity's heritage in every domain. We arouse curiosity about who we are and where we come from, and promote discussion about how to preserve and develop our uniqueness. Our future, as the title of this booklet, produced by UNESCO in cooperation with Terralingua and the World Wide Fund for Nature, suggests, depends on a common vision. We need more than ever to find ways to share and maintain this world of diversity in which languages, cultures and environments are mutually supporting and sustainable. [John Daniel, Assistant Director-General For Education](#)

*Our language is shedding tears all over
because its own children are deserting it,
leaving it alone with its heavy burden.
Those who speak it are labelled out-of-date,
although it runs faster than an eagle.
This tongue of mine I use to appreciate taste ;
How can one taste with someone else's tongue ?*

☞ From a Wolof poem by Useyno Gey Cosaan (Senegal)¹



^{*1} Quoted from Fishman, Joshua A. (1997).
*In Praise of the Beloved Language : a comparative view of positive
ethnolinguistic consciousness*. Berlin : Mouton de Gruyter, p. 292.





The diversity of life, in nature and culture

The single most striking characteristic of life on Earth is its enormous diversity. This booklet introduces the concept of biocultural diversity (see definition in the glossary). The diversity of life on Earth is formed not only by the variety of plant and animal species and ecosystems found in nature (biodiversity), but also by the variety of cultures and languages in human societies (cultural and linguistic diversity). The booklet begins by describing both the world's biodiversity and its linguistic and cultural diversity, presenting the threats that each of them is facing. Then all these forms of diversity are related to one another. The links between language, culture, and the environment suggest that biological, cultural, and linguistic diversity should be studied together, as distinct but closely related manifestations of the diversity of life on Earth. The term biocultural diversity has been framed to refer to this new field (see Text Box 1).



TEXT BOX 1

The biocultural perspective has been formulated as follows :

« Ecological diversity is essential for long-term planetary survival. All living organisms, plants, animals, bacteria and humans survive and prosper through a network of complex and delicate relationships. Damaging one of the elements in the ecosystem will result in

unforeseen consequences for the whole of the system. Evolution has been aided by genetic diversity, with species genetically adapting in order to survive in different environments. Diversity contains the potential for adaptation. Uniformity can endanger a species by providing inflexibility and unadaptability. Linguistic diversity and biological diversity are... inseparable. The range of cross fertilisation becomes less as languages and cultures die and the testimony of human intellectual achievement is lessened.

In the language of ecology, the strongest ecosystems are those that are the most diverse. That is, diversity is directly related to stability; variety is important for long-term survival. Our success on this planet has been due to an ability to adapt to different kinds of environment over thousands of years (atmospheric as well as cultural). Such ability is born out of diversity. Thus language and cultural diversity maximises chances of human success and adaptability ».²

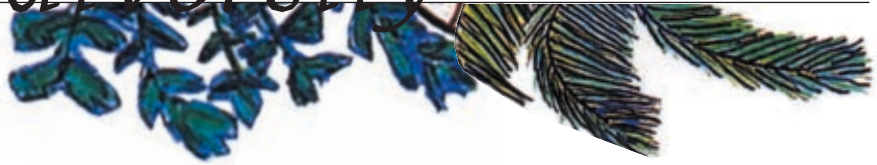
This new field aims to analyse the nature of these links between all kinds of diversity at various levels, from the local to the global. It also seeks to identify the threats that biocultural diversity is facing, the foreseeable consequences of these, and the actions needed to counter these trends and help restore, protect, and foster the diversity of life. Finally, the booklet discusses what could be done about the loss of the diversity of life, in nature and culture.

The biocultural relationships are illustrated with the help of a wall map that combines these diversities. Both the booklet and the map were prepared in collaboration between UNESCO, Terralingua, and World Wide Fund for Nature (WWF) International.



*2 From Baker, Colin (2001). Book Review of Tove Skutnabb-Kangas. *Linguistic Genocide in Education - or Worldwide Diversity and Human Rights?* Mahwah, New Jersey: Erlbaum. 2000. xxxiii+785 pp. *Journal of Sociolinguistics*, 5:2, May 2001, 279-283.

biodiversity



The history of the natural world is the history of the increase in the number of species of living organisms over time. Natural scientists have so far identified approximately 1.5 million different species: plants (trees, bushes, grasses, herbs...), animals (birds, mammals, fish, amphibians, reptiles, molluscs, worms, insects...) fungi, algae, bacteria and viruses. And that figure is small compared to the total number of species that scientists believe may exist on the planet. Biologists suggest that the number of species currently living on Earth may range between 5 and 15 million, with a « working figure » of about 12.5 million. Estimates vary greatly because of the difficulty of calculating how many species may be left to « discover », that is, to be named and described by researchers. Scientific evidence indicates that most natural diversity is concentrated in the tropical regions of the planet (see Text Box 2), but these regions are still poorly studied. Research continuously surprises us with new information on the richness of the natural world.

TEXT BOX 2

Two examples of where biodiversity abounds: as many different species of ants were found to live on a single tree in the Amazon forest as are known to exist in the whole British Isles. And one estimate of the biological life of just one acre in a warm temperate forest stated that there are some 50,000 vertebrates (= mammals, birds, reptiles and amphibians), 662,000 ants, 372,000 spiders, 90,000 earthworms, 45,000 termites, 19,000 snails, 89 million mites, 28 million collembola (the springtail insects), and some 5,000 pounds (= 2,268 kilogram) of plant life divided into at least 2,000 species – there is more plant diversity in the one acre of temperate forest than in the whole of Britain.³

By looking at the wall map (and Table 3 below), we can identify the first three **biomes** (see definition in the glossary) on the list, tropical or subtropical forests of various kinds, all in various shades of green, and the seventh biome, Tropical and Subtropical Grasslands, Savannas and Shrublands, in bright yellow. The highest species diversity is found in the

³ From Skutnabb-Kangas, Tove (2000). *Linguistic genocide in education – or worldwide diversity and human rights?* Mahwah, New Jersey: Lawrence Erlbaum Associates, p. 80.

forests of the tropics (such as the rain forests of the Amazon Basin in South America, the Congo Basin in central Africa, and many parts of South Asia and the Pacific), as well as in certain marine and coastal environments (such as coral reefs and mangroves).

However, a remarkable variety of plant and animal species exists in all kinds of environments. This includes tundra (the treeless plains of the Arctic regions) and deserts (biomes 11 and 13 on the map), whose flora and fauna often include species that are rare or **endemic** (that is, they exist in a particular region only).

This abundance of diversity in the natural world is known as **biodiversity**, a technical term that refers to the total variability of living organisms on Earth. Diversity is the basic condition of the natural world. Biologists tell us that diversity is what makes environments resilient, that is, able to adapt to change and successfully tolerate climate variation, natural disasters, infestations of pests, and other potentially destructive conditions (Text Box 1).

Thriving biodiversity is essential to the healthy functioning of **ecosystems** (the systems formed by the interactions of living organisms with their environments) and to the ability of ecosystems to provide their vital services. These «ecosystem services» include recycling soil nutrients, purifying the air, and providing fresh water as well as biological materials for food, fibre, and fuel. All life, including human life, depends on these services.



biodiversity at risk

Yet, as is well known, the world's biodiversity is at extreme risk. Biologists speak of a massive « extinction crisis », that is, a world-wide loss of plant and animal species and their **habitats** (the natural environments of these species). Further information can be found in « Red Lists » on species at risk (Table 1) which are monitored by the World Conservation Monitoring Centre.

TABLE 1_ Red Lists of threatened animals and plants

The web-sites for the Red Lists of Threatened Plants and Threatened Animals are

- * <http://www.rbge.org.uk/data/wcmc/plants.by.taxon.html>
- * http://www.wcmc.org.uk/species/plants/plant_redlist.html
- * <http://www.wcmc.org.uk/species/animals/>

These lists are monitored by the World Conservation Monitoring Centre,
219 Huntingdon Road, Cambridge CB3 0DL, UK ;
phone 44-1223-277 314 ; fax 44-1223-277 136 ;
email: info@wcmc.org.uk

more general web-site <http://www.wcmc.org.uk/species/data/index.html>

Scientists agree that the extinction crisis is due almost exclusively to human action.

Two of the main causes are the following :

- * **Habitat destruction.** When we clear forests to create more farmland, we not only change the way the land is used, we destroy the habitat of plants and animals that require a forest environment to survive. And, as more and more of the planet is converted to a narrow range of human uses (including transport and infrastructure for that transport), specialized species are driven to extinction. Destruction of tropical moist forests in the Amazon, central Africa, and southeast Asia are prime examples.

- * **Invasions of exotic species, alien to the region where they spread.** Some species are capable of aggressively invading new habitats, taking over or driving out populations of localized native species in the process. Exotic species are especially devastating to remote islands (e.g. Hawaii and Guam) but they can also have major impacts in large continental masses, as has happened in Australia. Foxes, goats, rabbits and rats, or

dandelion, stinging nettle, white clover, purslane, sow thistle, plantain and chickweed are examples of species that have spread widely, damaging in turn the native ecosystems in many parts of the world, in what has been called « ecological imperialism » (by Alfred W. Crosby).⁴

These and other large-scale human activities are dramatically affecting the resilience of ecosystems. The changes are so massive that ecosystems are losing their ability to adapt and are becoming permanently degraded. One significant example is the process of desertification in parts of Africa. Another is the virtual extinction of plant and animal life in certain bodies of water, such as in the Aral Sea in Asia.



TEXT BOX 3

The biologist E. O. Wilson has summed up the crisis: « If present trends continue, the result will be irreversible impoverishment of species. At the current rate, we will lose half the plant and animal species on Earth by the end of the century... Each species is a masterpiece of evolution that humanity could not possibly duplicate even if we somehow accomplish the creation of new organisms by genetic engineering. Massive loss of species would decrease the stability of the world environment. Beyond that, we will lose living libraries of genetic information that could be enormously useful to humanity in the future. » ⁵

Over the past two decades, environmental conservation efforts have intensified all over the world in response to this crisis. Biologists have discussed principles for determining what kind of areas should have priority in plans for conservation.

Firstly, 17 « **megadiversity** » **countries** have been identified, that is, countries that are considered likely to contain the highest percentage of the overall global species richness (Table 2). Most of them are fairly close to the Equator, where biodiversity-rich rain forests are concentrated. Nordic countries and arid countries are not on this list, since, as indicated above, tundra and deserts are not very rich in biodiversity, although they are commonly rich in rare and endemic species.⁶

TABLE 2_ The Biological « Megadiversity » Countries

Africa:	Democratic Republic of Congo, Madagascar, South Africa
Americas:	Brazil, Colombia, Ecuador, Mexico, Peru, USA, Venezuela
Asia:	China, India, Indonesia, Malaysia, Philippines
Pacific:	Australia, Papua New Guinea

Secondly, biologists have also singled out 25 **biodiversity hotspots**. These are relatively small regions (mostly in the tropics) with particularly high concentrations of rare and endemic species. Some examples are :

- * the Atlantic forest region of South America, where forest cover has been reduced to less than one tenth of its original extent (once three times the size of the state of California in the U.S.A.), threatening the survival of numerous species of primates and birds ;
- * the Cape Floristic Region along the Western coast of South Africa, whose unique array of endemic species is being threatened by agricultural development and the invasion of alien (non-local) species ;
- * the region comprising the Western Ghats mountain chain of India plus the island of Sri Lanka, home to a large number of endemic reptiles and various endemic mammals, where the main threat is growing population pressure. ⁷

A third way of looking at biodiversity, adopted by the World Wide Fund for Nature (WWF), focuses on **ecoregions**. These are relatively large areas of land or water that present distinct associations of plant and animal species, natural communities, and environmental conditions. WWF has identified a total of 866 terrestrial ecoregions (freshwater and marine ecoregions are still being analysed). WWF considers that over 200 of the world's ecoregions (the « Global 200 ») are in need of urgent conservation efforts because they are especially distinctive and representative of the world's habitats. ⁸

The enclosed wall map represents all of the world's terrestrial ecoregions, grouped by « biome » and « major habitat type ». A **biome** is a region, either **aquatic** (freshwater or marine) or **terrestrial** (desert, forest, grassland, tundra), that contains a distinctive community of plants, animals, and other living organisms. ⁹ Classifying biomes according to various characteristics yields several major **habitat types** for each biome. The map identifies 14 terrestrial habitat types/biomes, each coded by colour (plus lakes and areas of rock and ice at the poles). Freshwater ecoregions are not represented on the map, since they largely overlap with terrestrial ecoregions ; nor are marine ecoregions, since the

*4 Crosby, Alfred W. (1994). *Ecological imperialism. The biological expansion of Europe, 900-1900*. Cambridge : Cambridge University Press.

*5 Interview, January 2002, <http://www.salon.com/people/conv/2002/01/14/eowilson/>

*6 Search the web at <http://www.conservation.org/xp/CIWEB/publications/videos/index.xml> for an educational video about megadiversity countries.

*7 You can learn more about hotspots at <http://www.conservation.org/xp/CIWEB/strategies/hotspots/hotspots.xml>

*8 An interactive website devoted to ecoregions can be found at <http://www.worldwildlife.org/wildworld> or <http://www.nationalgeographic.com/wildworld>.

*9 See <http://www.ucmp.berkeley.edu/glossary/gloss5/biome/> for additional information on biomes.

focus of this map is on areas inhabited by humans, which are terrestrial areas. Table 3 lists these 14 habitat types/biomes, and their distribution can be seen on the map.¹⁰

TABLE 3_ The World's Terrestrial Habitat Types/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 and savannas
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

WWF has also classified ecoregions according to their current conservation status (how well-preserved each ecoregion is at present) and in relation to the level of threat they face by human action, so that it is possible to predict future trends - in other words, which ecoregions are most « highly threatened » and hence in most urgent need of protection. The « highly threatened » areas are marked with purple-coloured shading on the enclosed map. As can be seen, many of these areas are found in the tropical and subtropical regions of the Americas, Africa, Asia, and the Pacific, where forest habitats are being destroyed at an alarming rate. But forests and other highly threatened habitats are also found in the northern regions of North America and Europe, where large-scale agriculture and industrial and urban development have taken a heavy toll on the environment over a longer period of time.

^{*10} More information about major habitat types can be found at <http://www.panda.org/resources/programmes/global200/pages/terra.htm>.



Cultural and Linguistic Diversity



However, diversity is not only a characteristic of the natural world. The idea of « diversity of life » goes beyond biodiversity. It includes the cultural and linguistic diversity found among human societies. The history of the human species is part and parcel of the history of life on Earth, ever since the first species of our genus Homo (which means « human »), Homo habilis, appeared in Africa probably about 2,5 million years ago. Our history as humans is also characterised by increasing diversification as people have adapted to new environments and climates. Still, although there is genetic variability within the human species, these genetic differences are superficial, so that biologically humans remain one and the same species.

Similarity and difference



Nevertheless, human communities world-wide have developed great variability over time in their cultural and linguistic behaviours: different ways of knowing and adapting to the world around them, different patterns of social organisation, different sets of beliefs, values, and practices, and different ways of communicating among themselves in daily life, as well as in ritual, politics, oral tradition, story-telling, song, and in all situations where we express ourselves through language.

Cultural and linguistic diversity can be thought of as the totality of the « cultural and linguistic richness » present within the human species. Historically, distinctiveness in culture and language has formed the basis upon which human societies have defined their own identities: we think of ourselves as speakers of certain languages and we subscribe to certain religions, customs, values and world views which we take as self-evident. It is also on the basis of these same/different distinctions that societies have handled their relationships with other societies. Those who speak the same language and have the same beliefs are felt to be parts of an « us »; those who speak other languages and have different customs and beliefs, are seen as « others ». These « others » can be seen either neutrally as « foreigners », or, more negatively, as the equivalent of what in ancient times were termed « barbarians », or, indeed, more positively as « foreigners » who are welcomed because they bring new knowledge and enrichment.

Knowledges, customs and beliefs thus vary for *social reasons*. But they are also dependent on specific *environmental conditions* that people have adapted to - what we eat, how food is preserved, the rhythms of work (when there is light; patterns of cold and warm, winter and summer, rainy and dry seasons), etc. - all depend on where we happen to live. There is a wide cultural variation among human societies. Much is also universal, however, so that although beliefs and rituals differ, all peoples do have beliefs about some external, invisible forces which influence or guide them and all have rituals to celebrate the progression through life: birth, puberty, childbirth, death, and so on.

The same is the case with languages: we have both similarity and difference. All languages have the same « building blocks »: all spoken languages have sounds, words, grammatical categories, sentences. But *how* we say things, how our languages make use of possible building blocks varies greatly. The number of cases in languages, for instance, ranges

between only 2 (as in English: nominative and genitive: girl, girl's) up to 14-16 (many Finno-Ugric languages), and up to languages such as the Tsez language in Daghestan, with 126 different case forms. Also *what* we say is adapted to our biological and social environments; we talk about what is important to us. Different languages have developed distinct vocabularies to express those differences that are important to their speakers. One would not expect to find dozens of words for different types of snow or reindeer in the languages spoken in the Sahara desert, or scores of words for different types of sand and camels in the languages of the far North. In this sense, languages have been called « the DNA of cultures » - they have encoded the cultural knowledge that people have inherited from their ancestors, and each generation continues to add to this heritage. Of course, someone living in the tropics could describe a specific kind of reindeer in his or her language, but they would probably have to use a detailed description, instead of just one word.

And we know too little as yet about the various Sign languages (languages mostly used by the Deaf) even to start estimating how much variation in « building blocks » may exist among these languages and how much the building blocks may differ from those of spoken (oral) languages (see Text Box 4).

TEXT BOX 4

Most Sign languages have not even been described by linguists yet. But Sign languages are fully-fledged, abstract, complex languages. Those that have had the chance to fully develop their vocabulary can be used to discuss anything that can be discussed in oral languages - from daily affairs to human rights conventions, the structure of the United Nations, or nuclear physics. ¹¹

In general, linguistic variation is much wider than biological variation in humans. To date, most of this variation is something that has little explanation. Languages are a veritable goldmine of information about how it is possible for humans to communicate with one another, both within the same linguistic community and between communities with different languages (and cultures).

^{*11} See the web sites of the European Union of the Deaf, EUD (<http://www.eudnet.org>) and the World Federation of the Deaf (<http://www.wfdnews.org/>).

Languages and their users



The estimated number of different cultures and languages currently existing on Earth is far smaller than the number of known biological species, but it is remarkable nevertheless - and considerably greater than many people realise. Here, too, figures vary, depending on the definition of what exactly constitutes « a language ». There are no exact linguistic criteria for judging what is an independent language and what is a dialect of another language. Mutual intelligibility can differentiate between languages and dialects in some cases, but there are numerous dialects of the same language, for instance dialects of English or Chinese, where the speakers do not understand each other well, sometimes not at all. Structural similarity or dissimilarity also differentiates between languages that are distant from each other, for instance between an Indo-European language (such as Russian, Hindi, Italian, English and German) and a Bantu language (like Zulu or Xhosa). However, it cannot tell whether Spanish and Italian, structurally similar, are two different languages or dialects of the same language (in this case Latin). But ultimately, the distinction is mostly a political one : decisions regarding the status of dialects are often taken

by elite speakers of a specific dialect who raise its status to that of a language.

This difficulty of defining what a language is, constitutes one of the reasons why we cannot tell exactly how many languages there are. Another is that so many languages have not yet been described by linguists. Figures for the number of different spoken languages range between 5,000 and 7,000, or go as high as 10,000. In addition, there may be even as many Sign languages as there are spoken languages. Nobody knows their numbers with precision because they are as yet poorly studied and because each country usually recognises only one single Sign language, if any at all. Most of the world's languages are spoken (or signed) by very few people (Text Box 5).



TEXT BOX 5

Basic information about languages

- * There are 6-7,000 spoken languages, and perhaps as many Sign languages
 - * The median number of speakers of a language is probably around 5-6,000
 - * Over 95 % of the world's spoken languages have fewer than 1 million native users
 - * Some 5,000 spoken languages have fewer than 100,000 speakers
 - * Over 3,000 spoken languages have fewer than 10,000 users
 - * Some 1,500 spoken languages and most of the Sign languages have fewer than 1,000 users
 - * Some 500 languages had in 1999 fewer than 100 speakers
 - * 83-84 % of the world's spoken languages are endemic: they exist in one country only.
-

Ethnologue, the most widely used catalogue of the world's languages¹², reports that there are 6,809 languages in 228 countries as of the year 2000, mostly spoken (114 Sign languages are included). On the enclosed map, these 6,809 languages are represented by dots placed in the approximate central location where each language is spoken, as

¹² <http://www.sil.org/ethnologue>

identified by *Ethnologue*. Languages, of course, are spoken over territories, but it is extremely difficult to show the exact territorial distribution of all the world's languages on a single global map. Furthermore, information about the exact geographic distribution of many languages is lacking or may be contested. While most languages are **endemic** (spoken in a single place), the majority of the numerically larger languages are spoken in more than one place, since they have spread beyond their places of origin owing to colonization or immigration. Even many of the endemic languages may have discontinuous distributions. This map should therefore be understood as being suggestive, rather than exact. It is a demonstration tool to illustrate the overall distribution patterns of the world's languages.

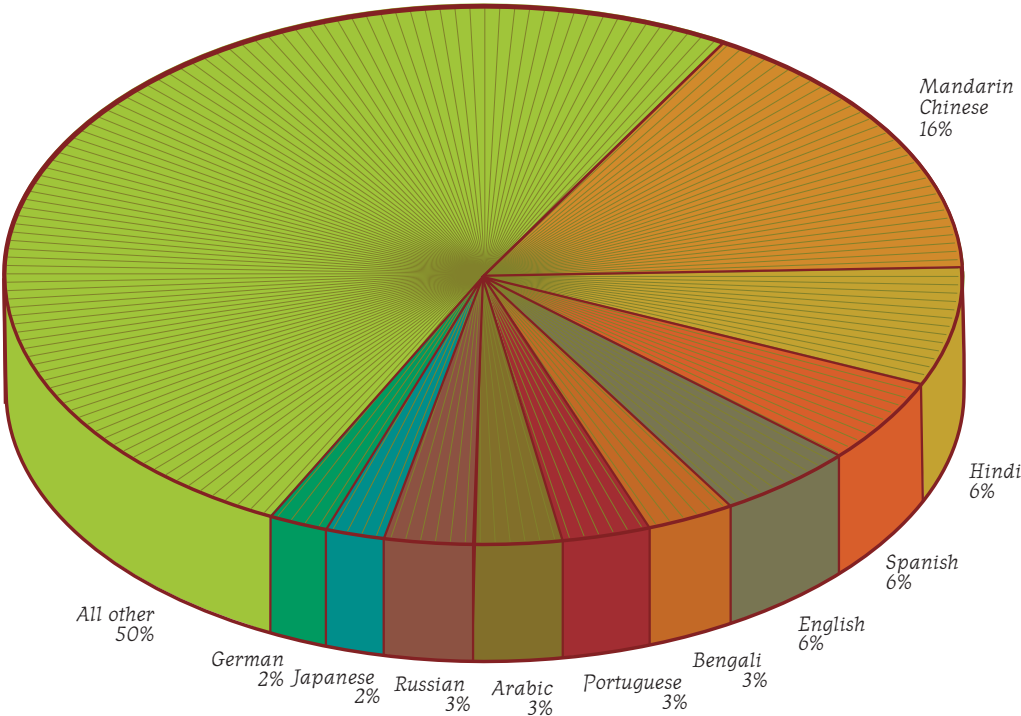
What is especially notable about this large number of languages spoken around the world is that fewer than 300 of them have populations of speakers of over 1 million. These « mega-languages » account for over 95 percent of the world's population of 6.1 billion people. The ten most spoken languages as of 2001 are Chinese, Hindi, Spanish, English, Bengali, Portuguese, Arabic, Russian, Japanese, and German. They represent fewer than 1 percent of all languages, but comprise virtually half of the global population (See Table 4 ¹³ and Figure 1).

TABLE 4_ Top 10 Languages in Terms of Number of Mother Tongue Speakers

RANK	LANGUAGE	MOTHER TONGUE SPEAKERS IN MILLIONS
1	Chinese, Mandarin	874
2	Hindi	366
3	Spanish	358
4	English	341
5	Bengali	207
6	Portuguese	176
7	Arabic	175
8	Russian	167
9	Japanese	125
10	German	100

¹³ These are estimates by Terralingua, 2002, mainly based on the *Ethnologue*, 14th edition.

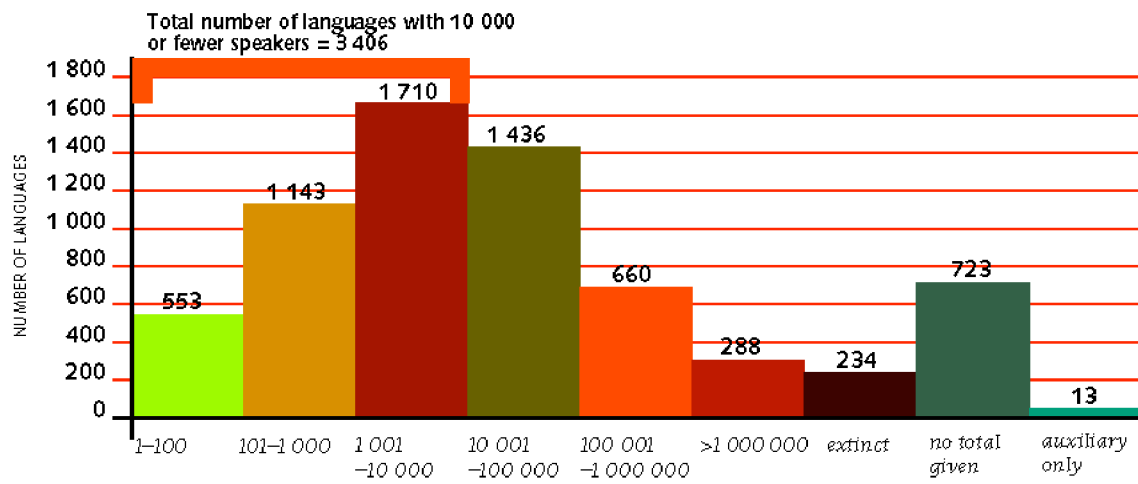
FIGURE 1_ Languages with the most mother tongue speakers :
proportion of world population ¹⁴



^{*14} Updated from Harmon, David (1995). The status of the world's languages as reported in *Ethnologue*. *Southwest Journal of Linguistics* 14: 1-33.

On the other hand, slightly over half of the world's languages are spoken by communities of 10,000 speakers or less. Overall, languages with up to 10,000 speakers total about 8 million people, in other words, some 0.13 percent of the world population (Figure 2).

FIGURE 2_ Size classification of world's languages by number of mother tongue speakers - numerical totals (n = 6,760)¹⁵



Hence, while more than nine out of ten people in the world are native speakers of one or other of only about 300 languages, by far the largest share of the world's linguistic diversity is found in small communities. Most of these are indigenous and minority peoples, who continue to speak the languages of their ancestors. These are the languages that have been and continue to be under threat, due to the ever-growing assimilation pressures.

Equally uneven is the geographic distribution of the world's languages. First of all, they are not evenly distributed by continent: 33 % of the languages are spoken in Asia, 30 % in Africa, 19 % in the Pacific, 15 % in the Americas, and only 3 % in Europe (Table 5, based on *Ethnologue*, 14th edition).

¹⁵ From Harmon, David (1995). The status of the world's languages as reported in *Ethnologue*. *Southwest Journal of Linguistics* 14: 1-33. Total count of world's languages based on 12th edition of *Ethnologue*.

TABLE 5_ The distribution of languages

Region	Number of languages	Percentage of total
Europe	230	3 %
The Americas (South, Central, North)	1,013	15 %
Africa	2,058	30 %
Asia	2,197	33 %
The Pacific	1,311	19 %

Secondly, just as there are hotspots of biodiversity, there are also *hotspots of linguistic diversity*: areas of the world with especially high concentrations of different languages, many of which are endemic to those regions or countries. The world record for linguistic diversity goes to the Pacific island of New Guinea, comprised of the country of Papua New Guinea and the Indonesian province of Papua (formerly Irian Jaya): there are *more than 1000 languages* overall, spoken over a territory of nearly 885,000 km² (slightly smaller than France and Germany combined), with a total population of under 7 million people. Other linguistic diversity hotspots are found in Asia (especially in Indonesia and India), Africa (particularly in Nigeria, Cameroon, and the Democratic Republic of Congo), the Pacific (particularly Papua New Guinea and Australia), and the Americas (primarily in Mexico and Brazil).

Papua New Guinea, with over 850 languages, and Indonesia, with some 670, have together almost a quarter of the world's spoken languages, and all the other hotspots have over 200 each (Table 6, based on *Ethnologue*, 13th edition). On the wall map, several of these hotspots are easily recognizable: in Mexico and Central America, West-Central Africa, South Asia, and New Guinea, the concentration of dots is so high, that in some places they are depicted by large « blobs ». In each of these areas, a high number of different languages is spoken over a relatively small territory. In other cases (such as Brazil and Australia), the number of languages is comparably high, but distributed over much larger territories.

**TABLE 6_ The Linguistic « Megadiversity » Countries**

Africa:	Nigeria, Cameroon, Democratic Republic of Congo
Americas:	Brazil, Mexico
Asia:	Indonesia, India
Pacific:	Papua New Guinea, Australia

In addition to these hotspots, the following countries have over 100 languages each : the Philippines, Russia, USA, Malaysia, Peoples' Republic of China, Sudan, Tanzania, Ethiopia, Chad, New Hebrides, Central African Republic, Burma (Myanmar), Nepal and Vanuatu. However, this may be an underestimate. Again, the map illustrates the fact that, in some cases (e.g., Vanuatu), many languages are spoken in a small territory ; in others (e.g., Russia) the distribution is spread over a wide territory.



Languages

the wealth of human creativity



The world's languages represent an extraordinary wealth of human creativity. It can be said that, as a whole, they contain and express the total «pool of ideas», the universe of thought produced by the human species (see Text Box 6).

TEXT BOX 6

Each language reflects a unique world-view and culture complex, mirroring the manner in which a speech community has resolved its problems in dealing with the world, and has formulated its thinking, its system of philosophy and understanding of the world around it. In this, each language is the means of expression of the intangible cultural heritage of people, and it remains a reflection of this culture for some time even after the culture which underlies it decays and crumbles, often under the impact of an intrusive, powerful, usually metropolitan, different culture. However, with the death and disappearance of such a language, an irreplaceable unit in our knowledge and understanding of human thought and world-view is lost forever. ¹⁶

Linguists and anthropologists have suggested that the diversity of ideas carried by different languages and sustained by different cultures is as necessary as the diversity of species and ecosystems is for the survival of humanity and of life on the planet. Why? Because this diversity offers the highest possible variety of solutions to the challenges of survival. The larger the «library» of humanity's knowledge to which all humans can have access, the greater the likelihood that, where some approaches fail, others may provide vital insights. And access to the «library» is only gained through the world's languages. This perspective is centrally reflected in UNESCO's Universal Declaration on Cultural Diversity, adopted at the 31st session of UNESCO's General Conference (Paris, France, October 15-November 3, 2001) (Text Box 7).

TEXT BOX 7

«...Cultural diversity is as necessary for humankind as biodiversity is for nature. In this sense, it is the common heritage of humanity and should be recognised and affirmed for the benefit of present and future generations.» (Article 1). ¹⁷

The linguistic and cultural extinction crisis



Yet, this precious heritage of humanity is itself at risk. Another extinction crisis is taking place before our eyes, threatening the world's cultural diversity, particularly the diversity and richness of languages. Many of the world's cultures and languages - especially, but not only, the numerically smaller ones - are in grave danger of being overwhelmed by other, more dominant languages and cultures. Hundreds of languages have already disappeared over the past few centuries, particularly since the late 15th century when the era of European colonisation began. And the trend is accelerating throughout the world, under the homogenising pressures of both national assimilation and economic globalisation. Virtually all languages with 1,000 speakers or under are threatened in this sense, although even more widely spoken languages are fully susceptible to the same pressures. Among these smaller languages, many have reached a stage of near extinction, with only a few elderly speakers left. Statistics on « nearly extinct » languages range between 6 and 11 % of the currently spoken languages.¹⁸

The loss of languages has been especially marked in the Americas and the Pacific. Of Australia's 250 languages, with at least 600 dialects, at least 50 languages are now **extinct**¹⁹ and another 100 face imminent extinction. In the early 1990s, only 9 had more than 1,000 speakers. In the United States and Canada, the situation is equally grave.²⁰ *Ethnologue* lists 417 **nearly extinct languages** as of the year 2000 - that is, languages with only a few elderly speakers still alive. This means that these languages are no longer being transmitted to the younger generations and thus, as the older generations pass on, the languages will cease to be spoken. The wall map accompanying this booklet highlights those languages that *Ethnologue* reports as « nearly extinct ». Those languages considered « nearly extinct » are represented by red dots, while other languages are marked in black.

*16 *The Atlas of the World's Languages in Danger of Disappearing*, edited by Stephen Wurm, 2nd edition, published by UNESCO, 2001: 13.

*17 http://www.unesco.org/confgen/press_rel/O21101_clt_diversity.shtml

*18 From Maffi, Luisa (1998). Language: A Resource for Nature. *Nature and Resources: The UNESCO Journal on the Environment and Natural Resources Research* 34(4): 12-21.

*19 Or not « extinct » but « sleeping » and waiting to be woken up, as some Australian Aboriginal peoples optimistically put it.

*20 But linguists Leanne Hinton and Ken Hale put the word « green » in the title of their edited book *The Green Book of Language Revitalization in Practice* (Academic Press, 2001) to express the hope that languages could be taken off the « Red » Books of endangered languages (see Table 7), or should never be placed on them.

Of these « nearly extinct » languages, 161 are spoken in the Americas (particularly the USA) and 157 in the Pacific (principally Australia). Asia has 55 « nearly extinct » languages, Africa 37, and Europe 7.

These numbers for « nearly extinct » languages may seem small, but linguists warn that they only represent the tip of the iceberg. Many more languages are considered « **endangered** », showing signs that their speakers are beginning to switch to other languages, and that younger generations are no longer learning the language of their elders. Just as there are red lists for threatened animals and plants, Red Books have been compiled for threatened languages (Table 7).

TABLE 7_ Red Books of threatened languages

Europe	http://www.helsinki.fi/~tasalmin/europe_index.html
Northeast Asia	http://www.helsinki.fi/~tasalmin/nasia_index.html
Asia and the Pacific	http://www.tooyoo.l.u-tokyo.ac.jp/redbook/asiapacific/asia-index.html
Africa	http://www.tooyoo.l.u-tokyo.ac.jp/redbook/africa-index.html
Databanks for Endangered Finno-Ugric Languages	http://www.helsinki.fi/~tasalmin/deful.html ; http://www.suri.ee
Russia	http://www.eki.ee/books/redbook/
South America	http://www.tooyoo.l.u-tokyo.ac.jp/redbooks/Samerica/index.html

The latest edition of UNESCO's *World Atlas of the World's Languages in Danger of Disappearing* (2001) estimates that perhaps half of the world's languages may currently be endangered in varying degrees. Some scholars' prognosis is that even as many as 90 per cent of existing spoken languages may be extinct or near extinction by the end of this century.²¹

And, just as most of the biological species that may disappear will be ones that have not been scientifically studied, the majority of languages at risk have not been described, tape-recorded or written down. If they cease to be spoken, this will be a total loss, not only for the members of those language communities, but also for the whole of humanity.

With the language, much of the knowledge, beliefs, and values held by a community may also be lost or seriously diminished, replaced by those of a more dominant language and culture.

²¹ Krauss, Michael 1992. The world's languages in crisis. *Language* 68(1): 4-10.

Some of the main reasons for languages disappearing include:

* Formal education through the medium of a language that is not a child's mother tongue, leading to children not learning their own language fully (for instance not learning how to read and write it, and not learning the vocabulary and structures that the parent generation knows). This is a **subtractive language learning** situation, where the dominant language is learned at the cost of the mother tongue. Instead, knowledge in dominant languages can be added to the children's linguistic repertoire, at no cost to the mother tongues. In this kind of **additive language learning** situation the result is additive bilingualism or multilingualism, and the maintenance of the mother tongue. Subtractive language learning also means that these children will tend not to speak their mother tongue to their own children.

* Homogenising mass media, entertainment and other cultural products in dominant languages. These products send the message that the languages in which films, TV and pop music come have a higher status than others.

* Urbanisation, migration and employment mobility of people often lead to the disintegration of language communities, with fewer chances for children to hear and use their parents' language(s) on a daily basis.

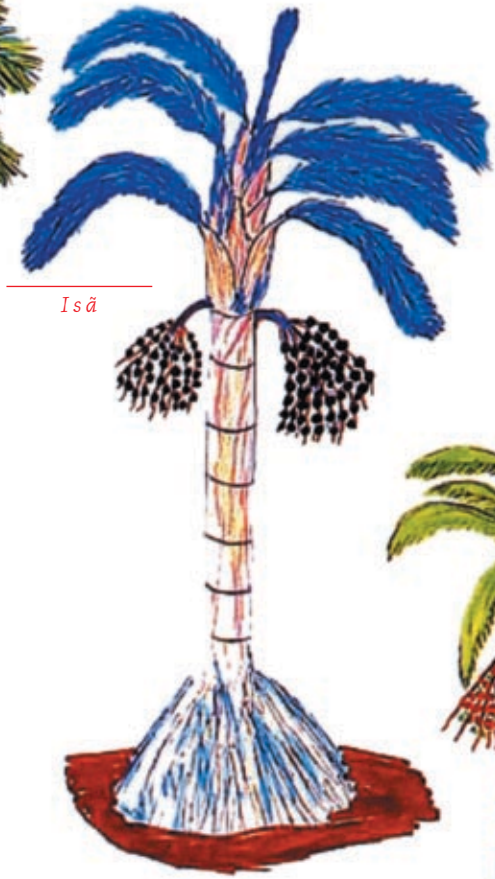
* A labour market which requires knowledge of dominant languages and does not offer economic or psychological incentives for maintaining the smaller languages.

* Insufficient protection of linguistic human rights.

* Either/or ideologies which see not multilingualism but monolingualism in dominant languages as normal, sufficient and desirable, both for states (one nation - one language) and for individuals. This leads to parents often thinking that their children have to choose between **either** learning their mother tongue (and losing out on the labour market) **or** learning the dominant language (and sacrificing their own language).



Kuta



Isā



Peri Isā



Awa Pani



Nisti



The drawings on this page come from the Brazilian organization Comissão Pró-Índio do Acre which has been working on environmental and cultural education among 11 ethnic groups in the Amazon since 1979. This example of palm tree classification in Kaxinawá, as drawn by local forestry worker Arlindo Tene Kaxinawá, illustrates the interaction between the linguistic and biodiversity of an Amazonian region, which names at least 10 different varieties of palm tree. The Commission works on bilingual and intercultural education in the Amazon region together with indigenous peoples and the Brazilian government, and is a good example of how education that takes into consideration the interrelation between linguistic, cultural and biodiversity can achieve positive results.



Biocultural diversity



The growing recognition of the scope and implications of the linguistic diversity crisis parallels the process that earlier led to the recognition of the biodiversity crisis. But in addition, as the previous paragraphs suggest, there is also an increasing realisation that biological diversity and cultural and linguistic diversity are not separate aspects of the diversity of life, but rather intimately related, and indeed, mutually supporting ones. Likewise, the extinction crises that are affecting these manifestations of the diversity of life may be converging also - due to common economic, political, and social factors - and perhaps even driving each other on.

This is especially the case with indigenous and minority communities that live close to the natural environment and depend on it for subsistence. They rely directly on it for food, medicine, construction materials and other products essential for their subsistence (through farming, herding, hunting, fishing, or gathering foodstuffs), as well as for their cultural and spiritual needs. Over time, these communities have through such activities developed in-depth knowledge of local ecosystems. They have adapted to them while at the same time learning to use and manage them to fulfil their needs. These societies have also elaborated complex classification systems for the natural world, reflecting a deep understanding of local

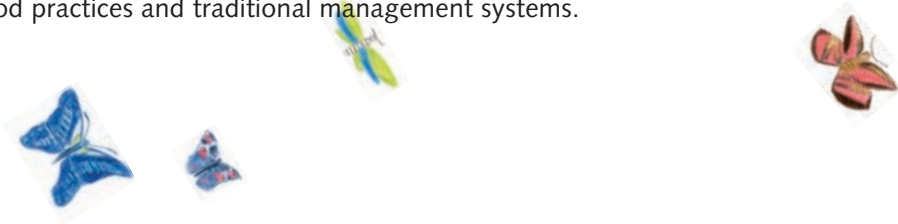
flora, fauna, ecological relations and ecosystem dynamics. Anthropologists call this traditional ecological knowledge. Much of this knowledge is both expressed and transmitted through language, in words, stories and jokes, teasing and criticising, planning and recounting events, and in general throughout everyday discussions, rituals, traditions and festivities. In many cases, indigenous and traditional knowledge has been found to be more sophisticated than Western science, and it precedes other sources of knowledge, such as scientists' findings. Ironically, the knowledge that was embedded in the smaller languages sometimes gets « rediscovered » by outsiders (Text Box 8).

TEXT BOX 8

Pekka Aikio, the President of the Saami Parliament in Finland (and an active reindeer herder), commented (November 2001) on a recently announced « discovery » by Nordic fish biologists that salmon can spawn also in very small rivulets – something that biologists had not thought possible. But the Saami, Aikio explained, have always known this : many of the rivulets studied even have a name in Saami that contains the word for « salmon spawning ground ».

When young people no longer learn the language of their forebears, or know it only partially, the special knowledge incorporated in their languages is often not transferred to the dominant language that replaces it. Commonly, this is because the dominant language does not have the vocabulary for this special knowledge, or even because the very situations in which this kind of knowledge and its relevance for survival are learned do not occur in the dominant culture whose language indigenous or minority people adopt. This occurs especially where the earlier informal family and community-based education is replaced by formal education. For example, Maya youths in the Highlands of Chiapas now get most of their education formally in schools. But textbooks do not teach them about the medicinal plants found in the local environment, which earlier generations have been using effectively for a long time to treat illness. Much of this knowledge is thus not being transmitted in the course of daily life. Many younger people do not learn the names, characteristics, and uses of such plants, which would constitute

readily available and reliable medicinal resources. Instead, they have to resort to the generally poorer medical care they can obtain from the « modern » medical system. Although it has not been uncommon for indigenous peoples to gradually move away from their low-impact technologies, as they have experienced heavy exploitation of and encroachment upon their territories, communities still strive to continue documenting and transmitting elders' knowledge to succeeding generations. The very existence of traditional ecological knowledge depends not only on databases, knowledge centres or research publications, but also on the possibility to use and develop it through traditional livelihood practices and traditional management systems.



Overlapping distribution of ethnolinguistic and biological diversities



The correlations between linguistic and cultural diversity and biodiversity can be observed by comparing the patterns of geographical distribution of the world's biodiversity and those of linguistic and cultural diversity, as well as by noting the relationship between the locations of threatened environments and languages. Areas of high biodiversity tend to host a high number of different languages. Comparing [Table 2](#) (biological megadiversity countries) to [Table 6](#) (linguistic megadiversity countries), 7 out of 9 top countries for **linguistic diversity** are also among the top 17 countries for **biological diversity**. In addition, in the top 25 countries for the number of endemic languages (that is, languages spoken only within the borders of the respective countries), we find 13 of the 17 biological megadiversity countries ([see the last column of Table 8](#)).

In countries around the world, there is a high level of coincidence of endemism for vertebrates and languages, flowering plants and languages, and birds and languages. These correlations can be seen in [Table 8](#). The list ranks countries not in terms of all languages but according to the number of endemic languages. Remember that endemic languages represent the vast majority (some 83-84 percent) of the world's languages. As can be seen, Papua New Guinea, which ranks first in terms of endemic languages, is number 13 in terms of endemic vertebrates. The USA is number 11 on both the languages and the vertebrates list. On the other hand, Nigeria is number 3 on the languages list but is not among the 25 top countries for any of the indicators of species diversity used here.

The wall map that accompanies this booklet reveals the overlapping distribution of all of the world's 6809 languages (as identified in *Ethnologue*) and 866 ecoregions (as identified by WWF). As can be observed on the map, this overlap occurs mostly in the forested areas of the tropics, the first 3 biomes on the map. Humid tropical climates appear to be especially favourable to both biological and linguistic diversification. At the same time, as the map shows, tropical forests are also among the most severely threatened regions and host some

*22 The Table is modified by Skutnabb-Kangas, from Harmon, David, and Maffi, Luisa (2002). Are Linguistic and Biological Diversity Linked?. *Conservation Biology in Practice* 3(1): 26-27. Figures for languages are derived by Harmon from the *Ethnologue*, 12th edition, and for vertebrates from Groombridge, B. (ed.) (1992). *Global Biodiversity: Status of the Earth's Living Resources*. World Conservation Monitoring Centre. London: Chapman and Hall. The countries which are on the top lists for endemism for both vertebrates and languages are bolded and CAPITALISED in Table 8.

TABLE 8_ Endemism in Languages Compared with Rankings of Biodiversity ²²

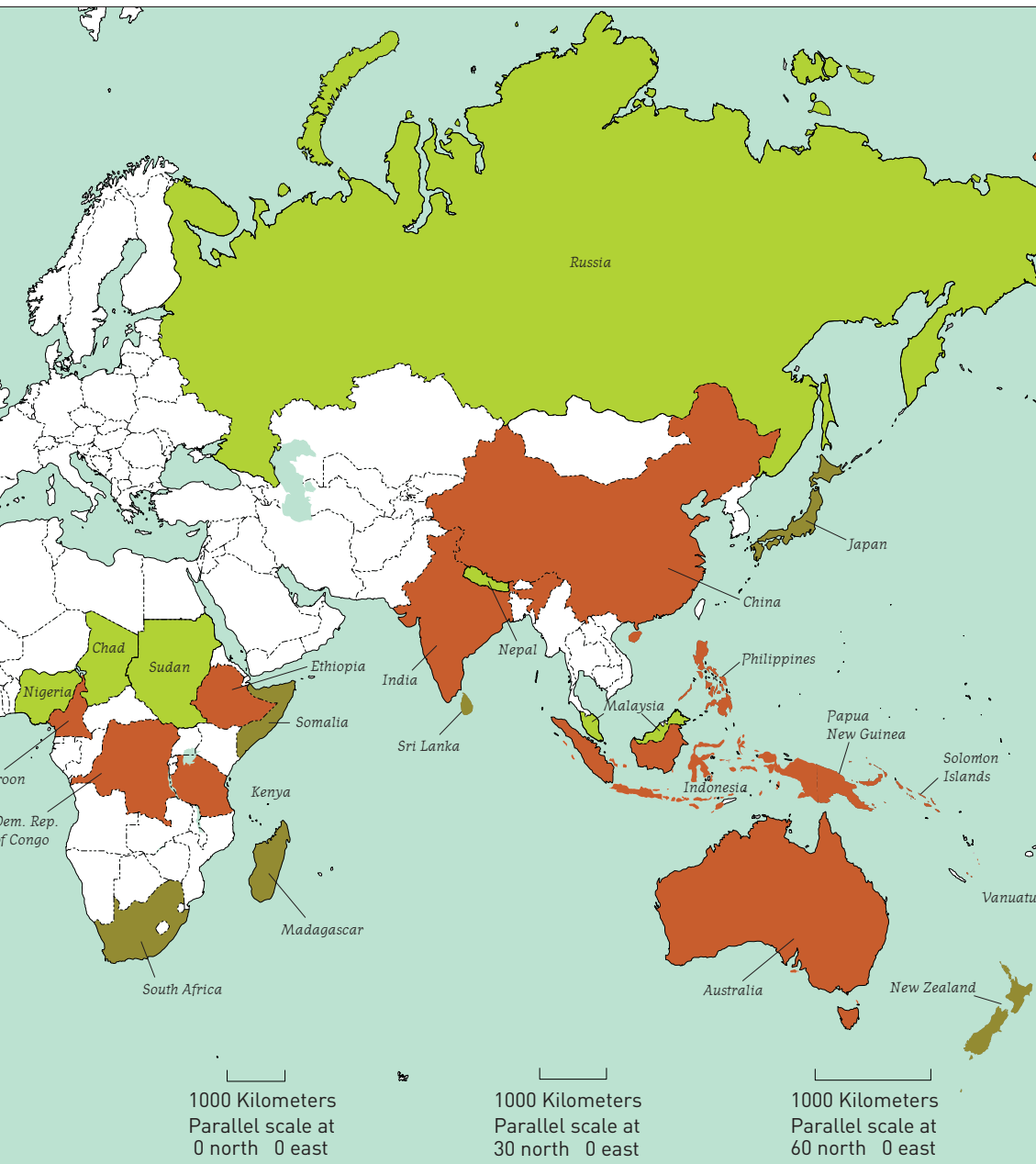
<i>Rank, total number of...</i>							On mega- diversity list?
Country	Endemic Languages		Endemic Vertebrates		Flowering Plants	Endemic Bird Areas (EBAs)	
	Rank	Number	Rank	Number			
PAPUA NEW GUINEA	1	847	13	203	18t	6	yes
INDONESIA	2	655	4	673	7t	1	yes
Nigeria	3	376					
INDIA	4	309	7	373	12	11	yes
AUSTRALIA	5	261	1	1,346	11	9	yes
MEXICO	6	230	2	761	4	2	yes
CAMEROON	7	201	23	105	24		
BRAZIL	8	185	3	725	1	4	yes
DEM REP OF CONGO	9	158	18	134	17		yes
PHILIPPINES	10	153	6	437	25	11	yes
USA	11	143	11	284	9	15	yes
Vanuatu	12	105					
TANZANIA	13	101	21	113	19	14	
Sudan	14	97					
Malaysia	15	92			14		yes
ETHIOPIA	16	90	25	88			
CHINA	17	77	12	256	3	6	yes
PERU	18	75	8	332	13	3	yes
Chad	19	74					
Russia	20	71			6		
SOLOMON ISLANDS	21	69	24	101			
Nepal	22	68			22		
COLOMBIA	23	55	9	330	2	5	yes
Ivory Coast	24	51					
Canada	25	47					

**MAP 1_ Endemism in language and higher vertebrates :
Comparison of the top 25 countries.²³**



²³ From Maffi, Luisa (1998). *Language: A Resource for Nature. Nature and Resources: the UNESCO Journal on the Environment and Natural Resources Research* 34(4): 12-21. Map based on research by David Harmon.

Map 1. visually displays some of the data in Table 8 by showing the global overlap of endemic vertebrates and languages by country.



Source: Harmon 1996, based on data from Groombridge 1992, 139-141, (for species) and *Ethnologue* 12th edition (for languages). Figures for Ethiopia include Eritrea. Higher vertebrates include mammals, birds, reptiles, and amphibians; reptiles not included for USA, China, and Papua New Guinea because the numbers were not reported in the source table.

of the highest concentrations of « nearly extinct » languages (as can be seen in the overlap of the red dots for « nearly extinct » languages and the purple shading for the highly threatened ecoregions). But humans and their languages are present in most ecoregions and most biomes, and many of these ecoregions and languages are also threatened. Many of the threats are the same for both the ecosystems themselves and the peoples who live in them and hence for the languages they speak. Large-scale conversion of land use and unsustainable exploitation of natural resources with agribusiness, cattle ranching, logging, mining, oil drilling, creation of large dams, urban development, and road construction are among those activities which impinge on these ecoregions.

Rapid socio-economic and political change affects local societies, alienating them from their traditional ways of life, or even removing them from their original environments. This in turn generally causes language and culture shift (adoption of a different, in general majority or otherwise dominant, language and culture). One result of these changes is that the use of traditional ecological knowledge and the ability to communicate it through language begin to fade out. The consequences often prove to be serious for the well-being of both the people and their environment. Local people may end up adopting (or being forced to adopt) ways of using the environment that were not developed locally and are not well adapted to local conditions. This has tended to lead to rapid depletion of natural resources and to environmental degradation. One example has been the conversion of forested land in the tropics to use for agriculture and pasture. The soil of rain forest areas is fragile and depends entirely on the forest itself for its regeneration. Once the trees are removed, it takes only a few years before the soil is depleted and the area turns barren. This reduces the population's ability to provide for food, water, medicine, shelter, and other basic necessities of life and affects their health status as well as their psychological, social, and spiritual conditions.

Linguistic diversity is, then, our treasury of historically developed knowledge - including knowledge about how to maintain and use sustainably some of the most vulnerable and most biologically diverse environments in the world. If during the next century we lose more than half of our languages, we also seriously undermine our chances for life on Earth. From this perspective, fostering the health and vigour of ecosystems is one and the same goal as fostering the health and vigour of human societies, their cultures, and their languages. We need an integrated biocultural approach to the planet's environmental crisis.



Addressing the biocultural diversity extinction crisis

A horizontal line with several colorful butterflies (orange, yellow, red, blue) scattered around it, some above and some below.

Support for the world's languages, and through them for the cultural heritage of the people who speak them, should therefore be high on the agenda of anyone concerned with environmental conservation and sustainable development. Ideas, knowledge and information are the main products in what we term the « knowledge society » or the « information society ». Areas of the world rich in languages likewise embody diverse knowledges of a variety of environments, different cosmo-visions, and a wealth of creative ideas. They are rich in what has been called « knowledge capital », and this is what is needed for innovation. Maintaining all our languages is necessary for solving problems that we are bringing onto ourselves, whether through traditional knowledge embodied in the diverse languages and cultures or through innovation derived from that knowledge.

Education, both non-formal and formal, can support the maintenance and development of languages and cultures in their ecological context or make it more difficult. As is well documented, the « wrong » medium of formal education can be one of the causes of the disappearance of linguistic diversity. Not understanding the language of the classroom increases early dropout rates substantially and makes learning to read and write much more difficult. The vast majority of children from numerically small language groups, if they attend school at all, have to accept instruction through the medium of a language that is not their own language.

Linguistic assimilation, whereby indigenous and minority children shift language through formal education, usually to become like those who speak the majority or dominant language only (or mainly), is not voluntary. Indigenous and minority parents often have no choice : there are no schools that use their language for teaching and learning. Even in those cases where these exist and parents have a choice, they commonly do not have enough information about the long-term consequences of the choices.

Indigenous and minority children's languages are often completely invisible in schools. The inaccurate belief prevails that these languages cannot be used for any meaningful purpose and that they are not adapted to modern technological information societies. Parents and children are also often given the false impression that they have to choose between languages : that they cannot learn both well. Through the ways that the educational system is organised, they are led to a false belief that they must disown their

own language if they want to learn the dominant language and get ahead in life.

Behind the homogenising influences of education and the media are the economic, social, military and political forces which further linguistic, cultural and ideological homogenisation, both globally and within countries, in the name of free markets, religion, national unity, cost, requirements of technology, efficiency and modernisation, and so on. UNESCO's Universal Declaration on Cultural Diversity (2001) calls for action against linguistic and cultural homogenisation. Its Action Plan sets several goals that reflect this, in particular «Safeguarding the linguistic heritage of humanity and giving support to expression, creation and dissemination in the greatest possible number of languages » (Point 5).

Over the past decade, community activists, researchers, and concerned others, including non-governmental and international organisations, worked hard to address these concerns. Activities range from surveys of the status of the world's languages, the documentation of endangered languages, the development of language maintenance programmes and mother tongue medium education, to the elaboration of human rights instruments and educational policies. UNESCO has been active at all these levels. Nevertheless, despite many serious attempts at valuing and promoting linguistic and cultural diversity, generally these attempts have not yet been successful in influencing government policy. Some examples are given below of arguments that can be used to change this situation.

In many parts of the world, research has shown that those indigenous and minority children who receive their education mainly through the medium of their first language, and who at the same time receive good teaching in the dominant language as a second language (taught by bilingual teachers), will learn in the end the dominant language at least as well as, and often somewhat better than, those children who have had all their teaching through the medium of the dominant language. In addition, they become bilingual or multilingual. ²⁴

It is often said that there is no money for teaching in the many languages spoken in Africa or Asia. In his comparative study of primary education in Zambia and Malawi, Edward Williams (1995) concluded that «the moral of the Malawian achievement would appear to be that if resources are scarce, there is a greater likelihood of success in attempting to teach pupils a known local language, rather than an unknown one». ²⁵ It is perfectly possible to use previously unwritten languages for teaching everything in school, even when there are really many of them, as the case of Papua New Guinea shows (see [Text Box 9](#)).

*24 For references, see Cummins, Jim (2000). *Language, Power, and Pedagogy: Bilingual Children in the Crossfire*. Clevedon, UK: Multilingual Matters and Skutnabb-Kangas, Tove (2000). *Linguistic genocide in education – or worldwide diversity and human rights?* Mahwah, New Jersey: Lawrence Erlbaum Associates.



TEXT BOX 9

Papua New Guinea, the country with the largest number of spoken languages in the world (around 850 languages, a population of just over 5 million), used in 2000/2001 380 languages as the media of instruction in pre-school and the first two years of elementary school, and planned to add another 90 languages in 2001-2002. Despite many problems and setbacks, children seem to « become literate more quickly and easily in their mother tongues than they did in English. They also appear to learn English more quickly and easily than their older brothers and sisters did under the old system. Access is increasing because many parents now appear more willing to send their children to school and to make the sacrifices necessary to keep them in school. Dropout has decreased. In particular, higher proportions of girls are in school than was previously the case. Children also appear to be more excited, pro-active, self-confident, and inquisitive about learning. They ask more questions. Teachers often recount their own memories of feeling confused and frightened when they began school and the teacher spoke to them in a language they could not understand. They are relieved that their students do not face the same handicap. Some teachers report mixed feelings: they feel they had better control of their students when they were meek and passive, yet they are excited that children learn faster since the Reform was introduced. » ²⁶

Many initiatives by schools, teachers, communities and grassroots projects also lead in demonstrating the principle that socially and culturally relevant teaching methods and curricula must include indigenous and traditional knowledge, as recommended by UNESCO (Education and Cultural Diversity, 2001). The Skolt Saami school in Sevettijärvi, Finland, is just one example (Text Box 10 with photo).



TEXT BOX 10

There are fewer than 400 Skolt Saami speakers in the world. They are just one example of how this integration of biocultural knowledges into school curricula can be done. Bilingual Skolt Saami-Finnish children in Sevettijärvi, Finland are taught through the medium of both languages. The school materials are created by the children and the teacher, from their own environment. The teaching supports the maintenance of traditional ecological knowledge, which is strengthened by working with parents and elders who visit the school and its cultural center (and are paid for their contributions). The children from whose classroom the photo below is taken, have also started learning their third language, English, as a subject.

*25 Williams, Edward (1998). *Investigating bilingual literacy: Evidence from Malawi and Zambia*. Education Research No. 24. London: Department For International Development.

*26 Klaus, David (in press). The use of indigenous languages in early basic education in Papua New Guinea: a model for elsewhere? *Language and Education*.

The birds depicted on the left of the photo below are named in Saami only. The animals in the middle are named in both Saami and English, and the little brochures hanging on the left are in Finnish and Saami. The Skolt Saami language is everywhere, and so is its link to traditional knowledge .²⁷



Photo: Kari Torikka.

²⁷ Skutnabb-Kangas, field notes, information from Satu Moshnikoff, Ulla Aikio-Puoskari, November 2001.

The road ahead



In 1992, the United Nations held the Conference on Environment and Development in Rio de Janeiro, Brazil (the « Earth Summit»), to elaborate a framework linking environmental protection to sustainable human development. The various international documents that resulted from the Summit (The Rio Declaration, The Convention on Biological Diversity (see Text Box 11), The Framework Convention on Climate Change, The Statement of Forest Principles, Agenda 21, and later the Convention to Combat Desertification and Convention on Wetlands) recognised the importance of traditional ecological knowledge for the conservation and sustainable use of biodiversity. ²⁸

TEXT BOX 11

Article 8j of the Convention on Biological Diversity affirms that the State Parties must « respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices. »

²⁸ Find the texts of these documents at <http://www.johannesburgsummit.org/html/documents/unceddocs.html>

None of these documents, however, explicitly recognised that the preservation, maintenance, and promotion of traditional ecological knowledge requires the preservation, maintenance, and promotion of the languages through which this knowledge is expressed and transmitted. More recently, however, there has been specific recognition of the role that languages play in maintaining this knowledge. In 1999, the United Nations Environment Programme published a companion volume to its 1995 *Global Biodiversity Assessment* (ed. V. N. Heywood), titled *Cultural and Spiritual Values of Biodiversity* (ed. D. Posey), in recognition that such values, and the languages through which they are transmitted, have a major role in the conservation of biodiversity. UNESCO's Draft Programme and Budget 2002-2003 expresses this intent (see [Text Box 12](#)).

TEXT BOX 12

« Respect for cultural and linguistic diversity, different systems of belief and indigenous knowledge will figure strongly in the design of local solutions for sustainability, with particular regard to the role played by local languages as a storehouse of knowledge on biodiversity and sustainable development. » ²⁹

One decade after the Rio Summit, there are many reasons to be concerned about the state of the three « pillars » of sustainable development: environment, society, and economy. It is more urgent than ever to promote a culture of peace, for humanity to learn to appreciate and protect this world of difference that we all share. Genuine progress will be made in the 21st century if humanity will take joint action to maintain and restore the resilience and vitality of our ecosystems, cultures and languages, on which the lives of future generations will depend.

^{*29} UNESCO's Draft Programme and Budget 2002-2003 31C/5, para. 01212.





To learn more

☞ Crosby, Alfred W. (1994).

Ecological imperialism.

The biological expansion of Europe, 900-1900.

Cambridge : Cambridge University Press.

☞ Crystal, David (2000).

Language Death.

Cambridge, UK : Cambridge University Press.

☞ Fishman, Joshua, A. (ed.) (2001).

Can Threatened Languages Be Saved ? Reversing Language Shift, Revisited : A 21st Century perspective.

Clevedon, UK : Multilingual Matters.

☞ Harmon, David (2002).

In Light of Our Differences : How Diversity in Nature and Culture Makes Us Human.

Washington, D.C. : The Smithsonian Institution Press.

☞ Heywood, Vernon H. (1995).

Global Biodiversity Assessment.

Cambridge, UK : Cambridge University Press.

☞ Hinton, Leanne & Hale, Ken (eds) (2001).

The Green Book of Language Revitalization in Practice.

San Diego : Academic Press.

☞ Krauss, Michael (1992).

The world's languages in crisis. *Language* 68 :1, 4-10.

☞ Maffi, Luisa (ed.) (2001).

On Biocultural Diversity. Linking Language, Knowledge and the Environment.

Washington, D.C. : The Smithsonian Institution Press.

☞ Mühlhäusler, Peter (1996).

Linguistic ecology. Language change and linguistic imperialism in the Pacific region. London : Routledge.

☞ Nabhan, Gary Paul (1997).

Cultures of Habitat : On Nature, Culture, and Story.

Washington, DC : Counterpoint.

☞ Posey, Darrell A. (ed.) (1999).
Cultural and Spiritual Values of Biodiversity.
New York : UNEP (United Nations Environmental Programme) & Leiden :
Intermediate Technologies, Leiden University).

☞ Skutnabb-Kangas, Tove (2000).
Linguistic genocide in education – or worldwide diversity and human rights?
Mahwah, New Jersey & London : Lawrence Erlbaum Associates.

☞ Wilson, Edward O. (1992).
The Diversity of Life.
Cambridge, Mass. : Belknap Press.

☞ Wurm, Stephen A. (ed.) (2001).
Atlas of the World's Languages in Danger of Disappearing.
Second edition. Paris : UNESCO Publishing.

The references mentioned in this booklet are all on Terralingua's website
(<http://www.terralingua.org>).



Glossary

Additive language learning

A new language is learned *in addition* to the mother tongue which continues to be used and developed. The person's total linguistic repertoire is extended.

Biocultural diversity

The diversity of life on Earth in both nature and culture.

Biodiversity

The total variability among genes, plant and animal species, and ecosystems found in nature.

Biodiversity hotspots

Relatively small regions with especially high concentrations of endemic species.

Biome

A region, either *aquatic* (freshwater or marine) or *terrestrial* (desert, forest, grassland, tundra) that contains a distinctive community of plants, animals, and other living organisms.

Cultural diversity

The variety and richness of cultures in human societies.

Ecoregions

Relatively large areas of land or water that present distinct associations of species, natural communities, and environmental conditions.

Ecosystem

An interdependent system of living and inanimate, but biologically active, components; designates terrestrial and aquatic systems of widely different sizes, from woods to tropical forests, from meadows to prairies, from ponds to oceans.

Endangered languages

Languages with some children speakers at least in part of their range but decreasingly so.

Endemic

Unique to a particular region or country.

Extinct languages

Languages (other than the ancient ones) with no speakers.

Habitat type

Specific types of biomes, classified according to various characteristics (for example, tropical versus boreal forests, or temperate versus montane grasslands).

Linguistic diversity

The variety and richness of languages in human societies.

Megadiversity countries

Countries likely to contain the highest percentage of the global species richness.

Nearly extinct languages

Languages with maximally tens of speakers, all elderly.

Not endangered languages

Languages with safe transmission of language to new generations.

Possibly extinct languages

Languages without reliable information of remaining speakers.

Potentially endangered languages

Languages with a large number of children speakers but without an official or prestigious status.

Seriously endangered languages

Languages with a more substantial number of speakers but practically without children among them.

Subtractive language learning

A new (dominant/majority) language is learned *at the cost* of the mother tongue which is displaced (it can no longer be used for all functions), or sometimes replaced. The person's total linguistic repertoire does not show (much) growth as a result of the learning.

Traditional ecological knowledge

In-depth knowledge of plant and animal species, their mutual relationships, and local ecosystems held by indigenous or traditional communities, developed and handed down through generations.



