The term ‘biodiversity’ a contraction of biological diversity was introduced in the mid-1980s by naturalists who were worried about the rapid destruction of natural environments such as tropical rainforests and demanded that society take measures to protect this heritage. The term was adopted by the political world and popularized by the media during the debates leading up to the ratification of mists and sociologists each have their own partial view of the concept. Biologists tend to define biodiversity as the diversity of all living beings. Farmers are interested in exploiting the manifold biological characteristics. Operating individually or in groups within trophic webs, these properties influence the nature and magnitude of the flow of matter and energy within the ecosystem. The term ‘biodiversity’ is perceived differently, depending upon the sociological group involved. Taxonomists, economists, agrono potential deriving from variations over soils, territories and regions. Industry sees a reservoir of genes useful in biotechnology or a set of exploitable biological resources (timber, fish, etc.). As for the general public: its main concern is with landscapes and charismatic species threatened by extinction. All these points of view are admissible, since the concept of biodiversity effectively refers to a variety of different concerns. Moreover, these different approaches are not independent of one another; they implicitly pursue the same objective, namely the conservation of natural environments and the species which they harbour. Biodiversity emerged as an environmental issue in the early 1980s, culminating in the Conference on Sustainable Development held in Rio in 1992. Towards the end of the 20th century, humankind grew conscious of its unprecedented impact upon natural environments and the danger of exhausting biological resources. At the same time, biological diversity was recognised as an essential parameter, in particular for the agro-alimentary and pharmaceutical industries. f the Convention on Biological Diversity. The role of biological diversity in an ecosystem concerns three levels of integration in the living world. Intraspecific diversity, i.e. the genetic variability of populations. It is due to the genetic diversity which is their biological heritage that species are able to respond to changes in the environment. Diversity among species in terms of their ecological functions within the ecosystem. Species exist in a large variety of forms, with different sizes and Ecosystem diversity, corresponding to the variety of habitats and their variability over time. Owing to their biological diversity, ecosystems play a global role in the regulation of geochemical cycles (fixation, storage, transfer, recycling of nutrients, etc.) and the water cycle. Measuring Biological Diversity Quantifying biodiversity is of practical importance when considering its evolution over time, geographical zones of interest and conservation strategies. Different methodologies are adopted for measuring biodiversity. None of them is universally accepted, and the choice of methods and scales tends to depend upon the objective pursued. From a theoretical standpoint, the correct procedure would be to evaluate all aspects of biodiversity in a given system. But such a task is practically impossible to accomplish. We must make do with estimates based on a number of indicators, including genetics, species or populations, the structures of habitats, or any combination that provides a relevant, albeit relative, evaluation of biological diversity. The most common unit of measurement is the species richness determined for all the taxa, or subsets of taxa, identified in a given environment. However, confusion should be avoided between biodiversity and species richness: the former includes the latter but is not restricted to it. A high number of species in a given environment is likely to be a good indicator for a larger genetic, phylogenetic, morphological, biological and ecological diversity. In groups with well-known taxonomies, the list of species is relatively easy to establish. For others, it is more difficult. The relative density of each species (also known as ‘evenness’) has also been used to compare different communities or ecosystems. The most frequently used indices are based on the estimated relative abundance of the species found in the samplings. However, these indices assign an equal functional weight to all species, for which there is no clear justification. Other indices have therefore been developed, taking into consideration such factors as taxonomic position, trophic state, or body size of the species. Generally speaking, the usefulness of such indices is limited, because they do not provide much information that is relevant on a practical level. Attempts have been made to enhance them with genetic and ecological input. Analogous indices are used in genetics : e.g. richness (the number of alleles for the same locus), evenness (the relative frequency of alleles), and heterozygosity, which associates the number of alleles with their relative frequency. Another approach involves identifying the diversity of ecosystems in a landscape, or habitats within an ecosystem. It is possible to proceed as in taxonomy by identifying, naming and classifying entities, comparing different situations, and then attempting to generalize one’s observations. This typological approach has established several categories of classification based on floral or faunal characteristics, on assemblages of species (phytosociology), or on landscape features (ecoregions, phenological structures, etc.). The current erosion of biological diversity Modern humans are endowed with unequalled technological means. We can make certain ecosystems disappear altogether or transform entire regions. For well-documented groups such as mammals and birds, or certain plant groups, registered extinctions provide a good overall indication. Accordingly, an estimated 108 bird species and 90 mammal species have disappeared since the year 1600. However, the real number is probably higher, because not all regions of the world maintain archives for reference. Moreover, the populations of many species have fallen to critical levels at the present time. A large proportion of the extinct species, whether they be mammals, birds, reptiles, terrestrial molluscs or plants, previously inhabited islands. But continental species such as the aurochs, the American passenger pigeon or the Emperor penguin have also been exterminated by hunting. In the marine domain, we know of only two mammalian species that have disappeared in recent centuries, although certain whale populations have experienced critical periods. Non-governmental organizations such as the IUCN (The World Conservation Union) have compiled ‘red lists’ of extinct and endangered species. Altogether, 584 extinct plant species have been recorded and 641 animal species, or an average of three extinctions per year since the beginning of the 17th century. These figures may appear modest, but they are, by all appearances, biased, since many extinctions have gone unrecorded and we are a long way from knowing all species. In reality, for many groups of flora and fauna, there is a lack of reliable data on the number of living species and the species presumed extinct. Given this context, it is difficult to offer serious quantitative information beyond that pertaining to a few limited taxa. There is, of course, no question of claiming that humans have no impact upon the living world; only that this impact is probably not identical for all groups under consideration. Clearly, some catastrophic assertions are founded more upon personal conviction or a desire for publicity than upon science. Some of these evaluations of the erosion of biological diversity are quantitatively debatable; moreover, they do not take phenomena of speciation in to account. Just as species evolve and adapt to natural environmental changes (this is what drives biodiversity), it is conceivable that species also evolve under the impact of man-made disturbances. One of the main factors responsible for speciation is allopatric 'the geographic isolation of populations that continue to evolve independently of one another'. The construction of reservoirs, for example, isolates animal and plant populations, enabling each to evolve separately on their own side of the dam. Introducing species to different, separate regions of the world is another way of creating the conditions for allopatric evolution. The time it takes for species to evolve depends upon the groups under consideration, but little is actually known about the pace of speciation for most groups.