



## Why matter about biodiversity loss ?

Anne Teyssède for the European Environment Agency, February 2006

- **Biodiversity is precious for itself**

The million species and billion populations presently living on Earth, as well as the complex aquatic and terrestrial ecosystems they form, are the result of more than 3.5 billion years of constant evolution. From an ethical point of view, humans have no right to destroy the extraordinary biodiversity on which they live.

*Links to :*

- **Martin Sharman's text "Why conserve biodiversity?"** : [http://biodiversity-chm.eea.europa.eu/convention/F1125911898/copy\\_of\\_1125912616](http://biodiversity-chm.eea.europa.eu/convention/F1125911898/copy_of_1125912616)
- **Robert Barbault's interview on the values of biodiversity** (to translate in english)

- **Human societies depend on biodiversity**

Continental and marine ecosystems provide humans with precious ecological "services", such as air and water purification, food and fibre provisioning, or soil fertility generation and renewal, which current rarefaction is threatening the economic welfare of many societies. An important research scope in biodiversity conservation is to understand the complex interactions between human societies and biodiversity, in order to alleviate the pressure of the first on the ecosystems they exploit, and hence to preserve the precious ecological service on which they depend.

- **More on ecosystems and human well being** : -> *See the text on the Millennium Ecosystem Assessment below*
- **Selected references on ecosystems and human well being** : -> *See the text on next page*
- **Vulnerability to global change in Europe** : -> *See the text on next page*

### ➔ The Millennium Ecosystem Assessment :

Marine and terrestrial ecosystems are changing at a high rate since last century, due to the intensification of human activities. In order to assess the consequences of ecosystem changes for human well-being, and to establish the scientific basis for actions needed to enhance the conservation and sustainable use of ecosystems by humans, an international ecosystem assessment involving more than 1300 experts has been carried out between 2001 and 2005, focused on the “services” delivered by the ecosystems.

The global results of this “Millennium Ecosystem Assessment” are very alarming : in 2005, more than 60% of the ecosystem services analysed are degraded or overexploited, and the picture is expected to worsen in the next decades without efficient conservative measures.

- What are ecosystem services ? -> *Link to the definition below*
- Reports on the Millennium Ecosystem Assessment :  
<http://www.millenniumassessment.org/en/index.aspx>

### ➔ What are ecosystem services ?

According to Gretchen Daily (1997), ecosystem services are “the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life”. In 2005, the Millennium Ecosystem Assessment defines them as “the benefits people obtain from ecosystems” and classifies them in four categories :

- Provisioning services of ecosystem “goods” : food, water, fiber, fuel, ...
- Supporting services : soil formation, organic waste recycling, trophic chains, ...
- Regulating services : climate regulation by forest and plankton carbon sequestration, water floods mitigation by wetlands, disease mitigation by genetic diversity, ...
- Cultural services : spiritual, aesthetic, recreation and education.

To know more on ecosystem services :

- G.C. Daily, 1997 (ed.) : “Nature’s Services”, Island Press, Washington D.C.
- The Millennium Ecosystem Assessment web site :  
<http://www.millenniumassessment.org/en/index.aspx>

### ➔ Selected references on ecosystems and human well being

- A. Balmford & W. Bond, 2005 : “Trends in the state of nature and their implications for human well being”. *Ecology letters* 8, 1218-1234.
- G.C. Daily, ed., 1997 : “Nature’s services”. Island Press, Washington D.C.
- G.C. Daily & K. Ellison, 2002. “The New Economy of Nature”. Island Press, Washington D.C.

- J. Diamond, 2005 : “Collapse : How societies choose to fall or succeed”. Viking Penguin, New York.
- Millennium Ecosystem Assessment reports : Several reports on Ecosystems and human well already published on Internet in 2005 and 2006 at :  
<http://www.millenniumassessment.org/en/index.aspx>

➔ **Ecosystem vulnerability to global change in Europe :**

Expectations about biodiversity loss in the next decades are less severe in Europe than in developing countries, noteworthy due to the low rate of European demographic expansion. However, changes in climate and land use are expected to decrease the supply of important ecosystem services such as soil fertility, water availability and resistance to fire, especially in Mediterranean and mountain regions. Different scenarios may be drawn for 2080, depending on the intensity of the major drivers of biodiversity change : socio-economic factors, atmospheric CO<sub>2</sub> concentrations, climate factors, land use.

More on these scenarios :

- Schroter D. et al., 2005 : “Ecosystem service supply and vulnerability to global change in Europe”. *Science* 310, pp. 1333-1337. Published online at : <http://www.sciencemag.org/cgi/content/abstract/310/5752/1333>
- See also the Prelude scenarios : <http://scenarios.ewindows.eu.org/reports/fo1077184>