

Fact sheet Rio+20

Source: Dirk van der Made

Fact sheet No. 3, 2012



Biodiversity and ecosystem services for a planet under pressure

We share this planet with millions of other species and varieties, and depend on ecosystems for all our basic needs. While current trends regarding biodiversity and ecosystem services are sharply and dangerously negative, the right actions can still restore a biologically rich and ecologically viable planet.

The challenge

The benefits provided by ecosystems, which include the myriad of functions carried out by water, air and soil, are essential for human lives and livelihoods. Biodiversity, which underpins and mediates the sustained delivery of these ecosystem benefits, is currently under unprecedented human pressure. Despite global commitments to reduce the impacts of human activities on our planet's ecosystems, the loss of biodiversity and ecosystem services continues at a high pace. This results in a significant and irreversible loss of our heritage and curtails options for future generations. Accelerated loss of biodiversity is likely to continue unless the main drivers of change, which include climate change, land use change as well as increasing demands on ecosystems, are mitigated substantially.

Issues of major concern

Global extinctions

The target set by world leaders at the World Summit on Sustainable Development in 2002 to halt the decline of biodiversity by the end of 2010 has not been achieved. About one third of the more than 50,000 species on the International Union for Conservation of Nature (IUCN) Red List remain endangered to some degree.

Homogenisation of biota and landscapes

In addition to a reduction in the total number of species and genetic varieties on our planet, the remaining living systems are increasingly becoming dominated by a few very successful species. Diverse and locally adapted species and ecological communities are being replaced by much less diverse managed croplands and plantations as well as by depleted, simplified and often polluted aquatic ecosystems.

Loss of resilience

There is increasing evidence suggesting that changes to ecosystems limit their ability to regulate environmental fluctuations and change. Extreme events such as floods, fires, disease outbreaks and storm surges are buffered to a lesser extent as a result, increasing the vulnerability of ecosystems and people to disasters and delaying their recovery from disturbances.

Exceeding critical thresholds

Declines in biodiversity and ecosystem services tend to be unexpected, abrupt collapses that are more likely to occur once a tipping point has been passed. Examples of such

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Extinctions per thousand species per millennium

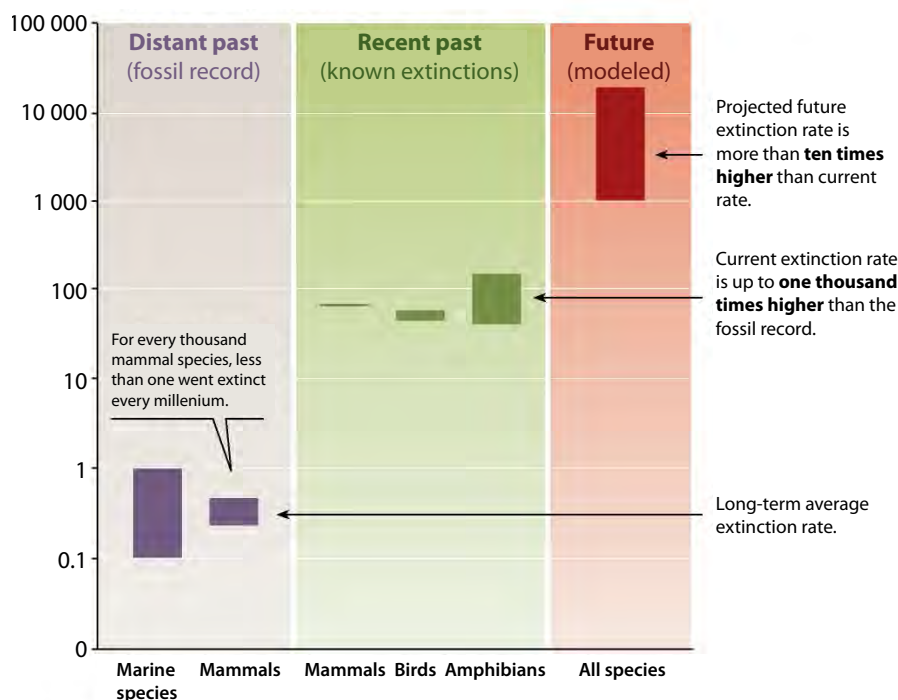


Figure 1: The current extinction rate is up to one thousand times higher than the long-term average extinction rate.

Source: Millennium Ecosystem Assessment

‘regime shifts’ include bush encroachment and desertification in Africa, coral bleaching in Asia and salinisation of rangelands in Australia. Furthermore, ecosystems worldwide are becoming affected by excessive nutrient loads originating most frequently from agriculture, sewage and industrial waste. Future risks include forest dieback in the Amazon basin and widespread collapse of coral reefs due to ocean acidification.

Priority areas to stem biodiversity loss

Create green economies based on ‘inclusive wealth’

Global economic systems, markets and policy decisions do not currently reflect actual costs and benefits. Conventional macroeconomic models consider ecosystem services and biodiversity as inexhaustible resources with which to create wealth. The greener economies of the future will need to be based on the concept of ‘inclusive wealth’, which covers all forms of capital – natural (land, water, soil, biodiversity, ecosystem services), social and human, as well as financial and manufactured capital.

Incorporate biodiversity and ecosystem services into policy and management decisions

Industrial, high-input agriculture, forestry, aquaculture and fishing are radically transforming ecosystems at the expense of such ecosystem services as freshwater supply, maintenance of soil quality and climate regulation. Intensive commercial production reduces the diversity of cultivated or domesticated species and varieties, narrowing future choices and decreasing food security. Biodiversity and ecosystem considerations must be incorporated into production systems at the local scale, an adequate system of protected areas must be established regionally, and the

underlying drivers of biodiversity loss must be targeted globally. Integrated planning approaches must be accompanied by the promotion of behavioural changes that lead to a shift in consumption patterns and a reduction in the total amount of land and water needed for the production of food, fuel and fibre.

Implement policies and practices that reduce inequities in access to the benefits derived from biodiversity and ecosystem services

Among more affluent nations or social groups, there is higher demand for biodiversity and ecosystem services. This demand is often met from distant sources, or by exceeding local sustainable supply. As a result, ecosystems are impoverished or altered in ways that reduce the long-term supply of benefits. While all people suffer from biodiversity and ecosystem service declines, those most affected – in most cases the poor – are not necessarily those that drive demand. A more just distribution of benefits requires good policies, including new approaches such as payments for ecosystem services.

Find new and better ways to govern ecosystems

There is often a mismatch between ecosystems and governance structures. Species, water, nutrients and pollutants are not immobile, and ecosystem processes take place irrespective of national boundaries. Many drivers of biodiversity change operate at the international scale. Yet the governance arrangements concerning biodiversity and ecosystems are typically subject to political jurisdictions. Global governance institutions working in partnership with national institutions, local organisations and the private sector, are essential to address the international-scale phenomena.

Biodiversity and ecosystem services in Switzerland

Switzerland has a wealth of biodiversity, which, however, has recorded considerable losses within the past decades. Since the 1990s the losses have been slowed down, but not stopped. The Swiss biodiversity strategy, which should be adopted by the Federal Council in 2012, is intended to reverse the trend.

The challenge

Despite its small size Switzerland possesses a rich biodiversity. This is due to the large heterogeneity of habitats with great differences in height, as well as due to extensive cultivation that has been carried out for centuries. With respect to the Alps, Switzerland has a special responsibility for biodiversity in Europe. Since the beginning of the 20th century biodiversity in Switzerland has recorded serious losses. Thus, flood plains decreased by 36 % between 1900 and 2010, moors by 82 % and dry meadows and pastures by 95 % (Lachat et al. 2010). Out of the 40,000 plant, animal and fungi species known in Switzerland, about one third is endangered (Cordillot & Klaus 2011). It has been possible to slow down the losses, but the quality of valuable habitats and the populations of many rare species continue to decrease. There are fears that in the long term, severely reduced biodiversity will be unable to guarantee ecosystem services, such as natural pest control or the protection from natural hazards.

Issues of major concern

Settlement development and transport infrastructure

Since 1970 the built-up area has almost doubled in Switzerland and uncontrolled development has markedly increased. In the lowlands the remaining near-natural areas are often small and isolated. However, both settlement area and transport infrastructures also offer untapped opportunities to promote biodiversity and to sensitise the population to the value of biodiversity.

Agriculture

In Switzerland many new habitats were generated due to cultivation until the end of the 19th century. From the mid-

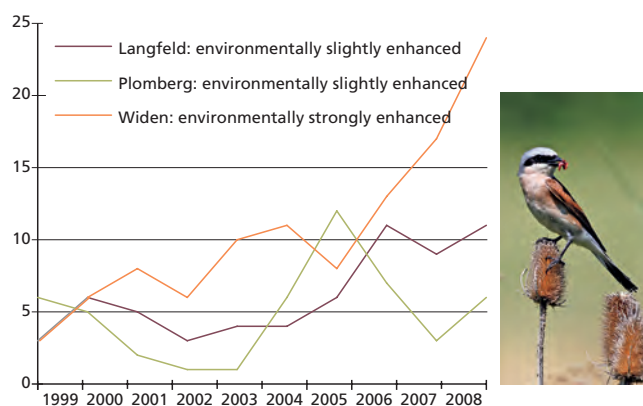


Figure 2: Success is possible: Development of the red-backed shrike population in environmentally enhanced agricultural fields in the Canton of Schaffhausen. Source: Swiss Ornithological Institute. Photo © Markus Jenny

20th century onwards, increasingly intensive agricultural production has considerably reduced biodiversity in cultivated land. The change was particularly drastic in the mid-lands and in the lowlands, but also at locations in the Alps and in the Jura that are particularly suited to agriculture. Since the 1990s the goal of conservation and promotion of biodiversity has been integrated in agricultural policy. Nevertheless, plant and animal populations continue to decline, in particular those relying on extensive cultivation. In contrast, the loss of genetic biodiversity of cultivated plants and productive livestock has been largely stopped.

Water bodies

The increases in agricultural and settlement areas, flood protection measures and hydroelectric use have massively

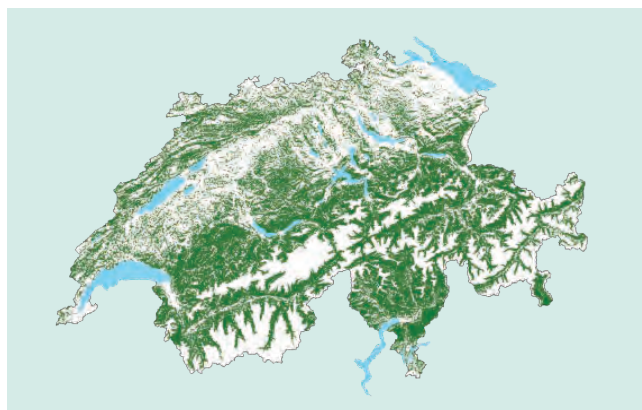


Figure 3: Dry meadows and pastures in Switzerland around 1900 (on the left) and in 2010 (on the right). 95 % of the areas have disappeared. Since 1990 alone, the decrease has been 30 %. Since the adoption of the Federal Inventory of Dry Meadows and Pastures in 2010, about 21,000 hectares of these special and species-rich habitats have been under national protection. Nevertheless, the quality of many of the remaining areas is declining. Sources: Swiss Federal Institute for Forest, Snow and Landscape Research WSL. © BFS GEOSTAT, Federal Office of Topography swisstopo, Federal Office for the Environment FOEN

reduced the quantity and quality of aquatic habitats and their connectivity. Attempts have been made for some years to remedy the shortcomings, but the intensified promotion of renewable energies puts additional pressure on the remaining near-natural watercourses. Thanks to the new Water Protection Act, the revitalisation of watercourses and lakesides is to be supported by increased federal funding, and the negative impacts of hydropower are to be reduced.

Climate change

Many thermophile species profit from climate change and expand their range to the northern side of the Alps or into mountain areas. However, due to the strong fragmentation of the landscape and the lack of networking structures, it is hardly possible for less mobile species to adapt their habitat fast enough. Furthermore, climate change means a challenge for Alpine species: Their habitat becomes considerably smaller. However, climate-induced land use changes, such as intensified agricultural land use in mountain areas, or the expansion of renewable energies are likely to have a greater impact than climate change itself.

Research, education and knowledge transfer

Politics, business and the population generally lack information about the risks for and the status and importance of biodiversity, and the capacity of actors for promoting, preserving and sustainably using biodiversity is often inadequate. Accordingly, biodiversity and ecosystem services are hardly taken into consideration when taking decisions with spatial impacts.

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Content: [Swiss Biodiversity Forum](#)

Concept and layout: [ProClim-](#)

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www.scnat.ch/e/Publikationen/rio+20/index.php?

How to maintain biodiversity in Switzerland

- The conservation and promotion of biodiversity and ecosystem services in Switzerland calls for establishing an ecological infrastructure with sufficiently large, high-quality areas which are appropriately allocated in space and interconnected.
- For the sustainable use of biodiversity, biodiversity targets are to be defined for all policy areas (such as agriculture, forestry, spatial planning and settlement development, energy production, tourism, transport infrastructure, international collaboration, etc.), and compliance with these targets has to be monitored.
- Society, politics and business should acknowledge biodiversity as the central basis of life, and ecosystem services are to be promoted and considered by the national economy. In this regard, research, education and dialogue are to be strengthened for the purpose of expanding knowledge and capacity building.
- Switzerland does not only have an impact on biodiversity within its national borders, but also on species and ecosystems in the entire world. The efforts made to date to maintain biodiversity on the international level, to ensure its sustainable use and to bring about equitable benefit sharing are therefore to be enhanced.

The draft of the Biodiversity Strategy Switzerland (FOEN 2011) has adopted these recommendations. Their implementation requires the provision of the necessary funding.

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