

## **Year 2010: an end goal for Biodiversity Conservation**

**by Asoka Abeygunawardana**

The year 2010 is declared as the International Year of Biodiversity. The theme of this year's World Environment Day was 'Many Species. One Planet. One Future'. The relevance of biodiversity to human is becoming a major international issue, as scientific evidence is gathered on the global implications of biodiversity loss. In 2002, Governments set 2010 as a deadline to achieve a significant reduction in the rate of loss of biodiversity. Since then the year 2010 has been seen as an end goal, so that biodiversity, life on Earth, is no longer threatened. All assessments of progress indicate that we are far from reaching this goal. The ecological footprint of humanity exceeds the biological capacity of the Earth by a wider margin than at the time the 2010 target was agreed. The International Year of Biodiversity is to revive this effort and to help raise awareness of the importance of biodiversity through activities and events in many countries. This is to elevate biological diversity nearer to the top of the political agenda.

Biodiversity is the variation of life forms within a given ecosystem, biome, or on the entire Earth. Biodiversity is often used as a measure of the health of biological systems. The biodiversity found on Earth today consists of many millions of distinct biological species. Rapid environmental modifications typically cause extinctions. Since life began on Earth, five major mass extinctions have led to large and sudden drops in the biodiversity of species. The most recent extinction event, occurred 65 million years ago, and it attracted more attention than all others because it killed the dinosaurs.

At present the species are becoming extinct at the fastest rate known in geological history, and most of these extinctions are tied to human activity. Some conservation organizations estimate species are heading towards extinction at a rate of about one in every 20 minutes. One figure frequently cited is that the rapid loss of species we are seeing today is estimated to be between 1,000 and 10,000 times higher than the natural extinction rate which means that between 10,000 and 100,000 species are becoming extinct each year. The International Union for Conservation of Nature (IUCN) Red List of Threatened Species of 2009 consists of 47,677 species. The list reveals that 21 per cent of all known mammals, 30 per cent of all known amphibians, 12 per cent of all known birds, 28 per cent of reptiles, 37 per cent of freshwater fishes, 70 per cent of plants and 35 per cent of invertebrates assessed so far, are under threat.

An indication of the magnitude of the combined pressures we are placing on biodiversity and ecosystems is provided by humanity's ecological footprint, a calculation of the area of biologically productive land and water needed to provide the resources we use and to absorb our waste. The world average ecological footprint is estimated as 2.7 global hectares per capita whereas the biological capacity is 2.1 gh per capita. This "overshoot" has increased from some 20 per cent at the time the 2010 biodiversity target was agreed in 2002.

The pressures do not act in isolation on biodiversity and ecosystems, but frequently, with one pressure exacerbating the impacts of another. Fragmentation of habitats reduces the capacity of species to adapt to climate change, by limiting the possibilities of migration to areas with more suitable conditions. Pollution, overfishing, climate change and ocean acidification all combine to weaken the resilience of coral reefs and increase the tendency for them to shift to algae-dominated states with massive loss of biodiversity. Increased levels of nutrients combined with the presence of invasive alien species can promote the growth of hardy plants at the expense of native species. Climate change can further exacerbate the problem by making more habitats suitable for invasive

species. Sea level rise caused by climate change combines with physical alteration of coastal habitats, accelerating change to coastal biodiversity and associated loss of ecosystem services.

Indirect drivers primarily act on biodiversity are population increase, higher per capita consumption, and increasing demand for energy, water and food, each of which contribute to direct pressures such as habitat conversion, over-exploitation of resources, nutrient pollution and climate change.

Biodiversity is not distributed evenly on Earth, but is consistently richer in the tropics and less rich in Polar Regions where fewer species are found. Sri Lanka being a tropical country is amongst the most floristically rich in Asia and for some faunal groups, its forests has the highest density of species diversity in the world. Sri Lanka is home to 3,210 flowering plant species, of which 916 species are endemic and 16% of the mammals in the island are also endemic. Sri Lanka has a wide range of topographic and climatic variation and this contributes to the special features of its biodiversity.

Chemical agriculture and deforestation are two of the most serious drivers for biodiversity depletion in Sri Lanka. Between 1990 and 2000, Sri Lanka lost an average of 26,800 ha of forests per year. During the period 1990-2005 Sri Lanka has had one of the highest deforestation rates of primary forests in the world. In that period the country lost more than 35 percent of its old-growth forest cover.

In agriculture many modern practices and approaches to intensification aimed at achieving high yields have led to a simplification of the components of agricultural systems and biodiversity and to ecologically unstable production systems. These include use of monocultures with reduction in cropping diversity and elimination of crop succession or rotation; use of high-yielding varieties and hybrids with the loss of traditional varieties and diversity together with a need for high inputs of inorganic fertilizer; control of weeds, pests and diseases based on chemical (herbicides, insecticides, and fungicides) treatments. Land and habitat conversion to large-scale agricultural production, including drainage of land and conversion of wetlands has also caused significant loss of biodiversity.

The loss of traditional knowledge is also detrimental, as for many local and indigenous communities biodiversity is a central component of belief systems, worldviews and identity. Cultural changes act as indirect drivers of biodiversity loss by affecting local practices of conservation and sustainable use.

The trends from available indicators suggest that the state of biodiversity is declining, the pressures upon it are increasing, and the benefits derived by humans from biodiversity are diminishing. The ultimate message is that despite the many efforts taken around the world to conserve biodiversity and use it sustainably, responses so far have not been adequate to address the scale of biodiversity loss or reduce the pressure. It is important that Sri Lanka recognizes biodiversity and traditional knowledge as its strengths while formulating the country development strategy.