Editorial

Global biodiversity an overview and Indian perspective

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The earth formed 4.6 billion years ago and the first life form came into existence 4 million years ago–simple unicellular bacterial cells. Some 65 years ago the dinosaurs became extinct and human species endured evolution about 200,000 years back. During the course of its development, earth has seen several geological activities that resulted in formation of continents that are seen in the present, explained by Alfred Wegner in 1912 as a continental drift theory. The enormous diversity of life forms in the biosphere has evolved essentially through process of selection during the course of organic evolution. The process of natural selection has played a significant role in determining distribution and existence of species alongside the phenomenon of speciation that has led to formation of new species that exist during the current times. Thus, the process of continental drift coupled with the phenomena of speciation and natural selection has largely influenced life on Earth termed.

The importance of habitat or locality is highlighted by the fact that in most of the cases such localities possess a number of endemic species distributed in several taxonomic categories or groups. Endemism represents a unique feature in the process of evolution which could be perpetuated and sustained only in the locality with conservation measures for propagation of these fragile organisms and their habitats. Based on the degree of endemism in species conservations, Myers has identified 12 such localities termed as biodiversity 'hot–spots' in tropical regions of the world. The eight hot–spots of biodiversity cover 454,400kms^2 or 0.3% of world's total land surface but hold 15,555 endemic species of plants representing 6% of the total number of species of plants worldwide. Thus about 49,955 endemic species of plants occur in an area barely 786,400kms^2 or 0.5% of the world's total land area.

Worldwide, conservation is reinventing itself where policy makers and activists have realized that the world's oldest conservation initiatives and indeed its most ancient protected areas for wildlife, are not those declared by rulers or governments. They were devised by 'ordinary' people, who over generations innovated beliefs, methods and customs to sustain natural ecosystems and their wildlife. However, the forest cover and the biodiversity are being depleted at an alarming rate, the major reasons being deforestation for development, forest fires and windstorms. An estimated 16.1 million ha of natural forest worldwide were lost annually during the 1990s. As a result of continuous degradation of forest cover, the global carbon cycle has been disturbed by 13% compared to the pre-industrial era.

Though the recognition for conservation of biodiverse areas and its biodiversity was established in several Conferences, it was only in late 1980s that systematic and concerted efforts took place with the constitution of an "Ad hoc Working Group of Experts on Biological Diversity" in 1987. The Rio Conference held in 1992 laid the foundation for conservation of forests under the Forest Principles and Conservation of Biodiversity under the Convention for Biodiversity (CBD). The CBD came into force on 29th December 1993, providing a framework for the sustainable management and conservation of world's natural resources. India is one of the first few countries to have signed as well as ratified the CBD soon after the it came into effect. The drafting of India's Biological Diversity Act 2002 (BD Act), established in the year 2003 is innovative in providing a combination of roles for the Authority to ensure conservation and other related issues which cannot be managed merely by invoking regulatory provisions.

India is one of the 17 mega diverse countries of the world and with only 2.5% of the earth's land area, it contributes about 8% of the known global biodiversity. According to an assessment made by the Forest Survey of India (FSI), the forest cover of the country is about 6,75,538km^2 and represents about 20.55% of India's total geographic area. India accounts for 8% of the recorded species of the world which includes millions of races, subspecies and local variants of species and the ecological processes and cycles that link organisms into population, communities, and all different ecosystems. Currently a network of 668 Protected Areas (PAs) has been established in India, extending over 1, 61,221.57sq. kms. (4.90% of total geographic area), comprising 102 National Parks, 515 Wildlife Sanctuaries, 47 Conservation Reserves and 4 Community Reserves. 39 Tiger Reserves and 28 Elephant Reserves have been designated for species specific management of tiger and elephant habitats. However, the ever mounting human population, rapid expansion of agriculture, industry, urbanization and large scale developmental projects such as dams, highways, mining have led to habitat destruction, fragmentation, degradation and over exploitation of biological resources are areas of serious concerns in India. Coupled with these factors unsustainable resource use practices and illegal trade of high value wildlife products have severely threatened many species of flora and fauna.

One of the important protected area networks in Maharashtra, the north–western part of peninsular India, is the Sanjay Gandhi National Park (SGNP) as it is amidst the busiest metropolis, Mumbai. SGNP, covering 103.36 km^2, was established in 1969 with the main object of preserving the picturesque natural environment, luxuriant vegetation and its inhabitants and protect the catchment forests of Tulsi and Vihar Lakes. Encroachments by slum colonies into densely forested areas of the SGNP have been taking place gradually since the early 1970s, steadily driving out several important faunal species from the national park. Furthermore, high anthropogenic interference for fuelwood,

illicit timber trades and uncontrolled use of lakes have resulted in fragmentation of 40% of dense tree cover in the central region of the SGNP.

The SGNP is home to leopard *Panthera pardus fusca,* it being the main predator of the park. History of the status of leopards given by the IUCN shows that from being categorized as "Least Concern" in 2002, the status of the animal has been raised as "Near Threatened" in 2008 in the IUCN Red Data List. The most volatile problem faced by the park is leopards straying outside its limits. The burgeoning human population inside its boundaries and development of residential complexes on its outskirts have caused degradation and shrinking of the leopard's habitat. Consequently, incidences of man–animal conflict in the park have risen. SGNP is the only site in India which reports sustained human–leopard conflict from within the boundary of a protected area.

In order to collate the existing biodiversity information on the park and identify the threats it faces, the Forest Department of SGNP has launched several initiation projects to assess the conservation status of *Panthera pardus fusca*. With Mumbai having the distressing distinction of being one of the polluted and crowded cities in the world, the SGNP is its only salvation. This fragile web of life that has taken millions of years in creations is on the brink of destruction. Neglected much longer, the forest and its vault of natural wealth might be lost forever. An increasing number of corporate houses taking interest in environmental issues through their Corporate Social Responsibilities initiative is a sign that protection of the forest is an optimistic possibility. Through concerted involvement and pro activeness of public and private sectors, corporate houses, the Municipal Corporation, departments of the park and electricity, police and citizens of the city, the natural heritage of the park can be conserved.

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Conflicts of interest

The author declares there is no conflicts of interest.