

CONCEPT OF BELT BIOSPHERE CONSERVATION*

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The concept of Belt Biosphere Conservation envisages the preservation of climax forests across the land and along the course of rivers and rivulets on both sides, covering different altitudes and latitudes, in a continuous stretch. This Belt Biosphere Conservation method is ideally suited for North-Eastern hill states of India, if not for the other states and Union Territories, having Himalayan ranges in their topography and it is the most viable method of conservation of forest-cover in the space-time continuum.

Himalayan ranges, especially of North Eastern region, form an active zone of speciation through natural mutation and hybridization and form the junction of the migratory elements from Tibet, China, Burma and Indonesia (Indo-Malayan archipelago). There is interesting combination of different taxa preferring both altitudinal and latitudinal ranges.

The conservation of isolated patches of forests—whatever might be the dimension of the biomes—would not serve the purpose of Belt Biosphere, save, when they cover all altitudes and even latitudes in a continuous stretch across the land, accommodating all types of climax vegetation of a particular unit of time and space

Otherwise, such isolated forests would become the *living fossil plant community* in the long run of geological times, incapable of regeneration (once they are destroyed) but progressively receding with the lapse of time, just as the present day shola forests of Nilgiris of South India, which are surrounded by grasslands (Mitra & Gupta, 1968).

Such biospheres, however, when maintained, to prevent soil erosion or for the protection and preservation of some particular species of a curious nature or of great academic interests, are desirable. But thereby, we would miss the wood for the trees in geological times. (*An isolated material system can never pass twice identically through the same state. Every successive state entails a definite decrease in its available energy*: 2nd law of thermodynamics). In fact, it might be observed that the more diverse the morphology and requirements of species for their progressive stages of development—birth, growth, reproduction and perpetuation—greater will be the viability and the concentration of taxa, in a unit of space and time. Thus, more will be the lasting fertility of the earth, and more reticulate and fragile will be the eco-system, in terms of energy re-

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cycling, at all levels of the organisation and least will be the competition. Harmonious co-existence is the result.

This region is unique in that, the virgin forests along the course of rivers are almost intact and even shifting cultivation (*Jhum* cultivation), which is in vogue since time immemorial, has not affected them. And the rivers run through deep ravines and precipitous gorges. The tribal people, by and large, prefer hill-tops more for their settlements and habitation than the vicinity of river-banks. As such, the Belt Biosphere Reserve method for conservation along the course of rivers, in this region, is feasible and would greatly control the menace of seasonal floods, prevent soil erosion along the steep slopes of mountain, and above all, the land slides. The origin of the rivers in this region is from the snow clad mountains and their course is sinuous and tortuous along mountain folds. Because of mountainous terrain, having folds after folds of mountain ranges at short distances and being oriented in the most irregular manner or rows, the rivers have to flow longer distances to cover small area of the general landmass. Thereby, they foster not only all types of typical climax vegetation, but also exhibit all degrees of combination of vegetation, spanning thereby both altitudinal and latitudinal zonations. Moreover, because of the destruction of forests here and there along the course of rivers, either due to change of the course of rivers or due to floods or landslides, all stages of vegetation in the phenomenon of plant succession can be observed in this region. This situation provides ideal natural sites to conduct researches also on the various aspects of plant succession and of sub-climax community and components.

North-Eastern region being the centre of origin of many cultivated crop plants and home of many a primitive ones (Balakrishnan, 1981, 1983; Chakravorty, 1951;

Chatterjee, 1940; Joseph, 1981, 1984; Mukherjee, 1957; Murti & Joseph, 1981; Rao, 1974; Takhtajan, 1969; Tanaka, 1958), maximum biome of this region must be conserved at any cost. As compared to any other region in India of identical climatic conditions; a unit of space here harbours more than twice the number of species. This higher incidence of species has led to the hypothesis : "More varied and dense will be the flora and vegetation of an area of a region which experiences occasional earth tremors" (Joseph, 1978). The invisible electro-magnetic energies released during tremors cause natural mutation, which would lead to speciation and also perhaps remove the incompatibility for inter-specific and inter-generic hybridization in time span. The comparative study of the components and vegetation of biospheres which fall both within and without tremor belt, for a continuous period of time is made possible only when they are protected for the purpose. (N. E. India falls within the tremor zone).

From the long-field observations and experience of this region, it may be suggested that the minimum breadth of the core area of biosphere, on both the banks of the river, shall be the width of the river-bed itself. It must be bordered further by buffer-zone of forests of larger width on either side, according to the topography of land through which the rivers flow, as also the representativeness in terms of flora and fauna, richness of genetic diversity, effectiveness as a conservation unit and the naturalness of the different eco-systems of the core area, if not of the buffer zone. Wherever the virgin forests are disturbed by human interference, the programme of natural regeneration, augmented by introduction of only native species, can be launched to resuscitate the climax vegetation.

The theory of evolution postulates that the present day species are the descendants

of ancestral types thereby exhibiting genetical relationship of all degrees of proximity. In other words, species, hence vegetation, is in dynamic equilibrium with the environment within the space-time continuum (the flowing river looks the same though ever changing, so is the vegetation). Hence, Belt Biosphere Conservation method alone can be viable and greatly facilitate migration of species, aggregation of species which in turn would lead to natural hybridization at different levels of the organisation resulting in the evolution of taxa and, thus, the emergence of more and more complex eco-systems with maximum diversity

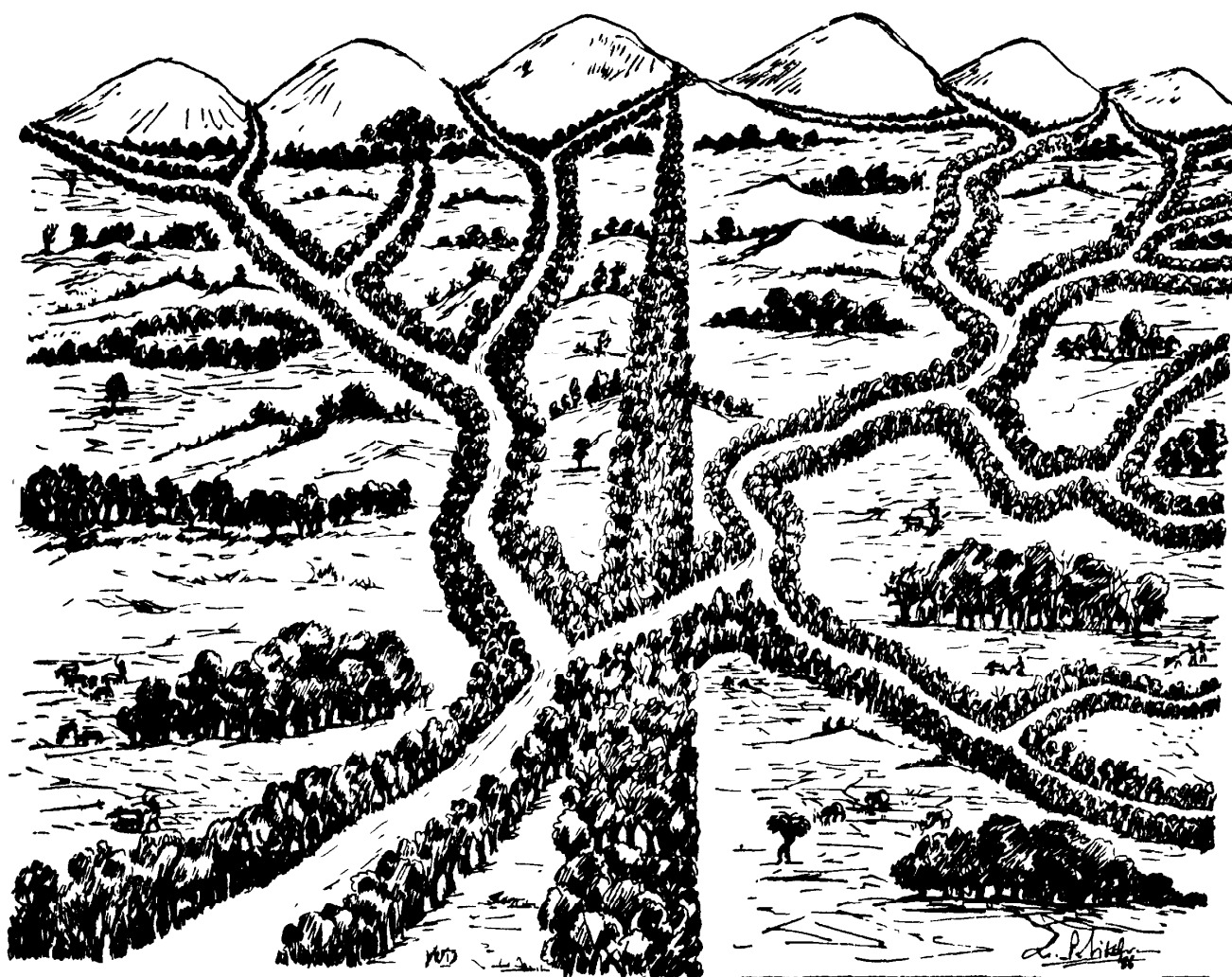
of taxa and hence relatively less amount of energy to maintain them.

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Belt Biosphere Geological Fold graphical presentation.

A diagrammatic presentation of Plant succession in belt biosphere with climax components depicting topographical zones.