Protection of biodiversity through environmental flows

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Flow regime in a river which mainly determines the properties of physical habitats in rivers and controls the growth and sustenance of the river and floodplain ecosystem is considered to be the master variable. Aquatic species in a river segment have evolved based on the natural flow regime and habitats. Clearly these factors govern the biodiversity of the ecosystems and any large change in these adversely affects biodiversity. Significant alteration in flow regimes also facilitates the invasion and growth of exotic species in rivers. Environmental flows are determined and implemented, among the other things, to protect and maintain biodiversity. Computation of environmental flows requires that the responses of species to the altered flow regimes are known and can be predicted. Extensive databases from biological and hydrological sectors are needed to develop such relationships in Indian conditions.

Water resources in rivers need to be developed to provide various services to the society: water for drinking, irrigation, and industrial needs, and to generate electrical energy. These developmental activities accompanied by land use changes necessarily impact river flow regime. The framework for surface water development with due emphasis on conservation of biodiversity will require the following: a) identify the species and habitats to be protected, b) Measure or estimate spatial and temporal variation in river flow quality and quantity, c) develop relationships between hydrologic regime, habitats, and aquatic life. Since all these require time and resources, simplified approaches to set environmental flows in the meantime are required. This paper provides a critical review and discussion on these aspects.

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Natural resource management in Turkish villages to improve rural livelihoods

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In our ever-changing world our nutrition requirements and consequently our food supply are a constantly evolving science. Both agriculture and conservation of biodiversity go hand in hand in the pursuit of sustainable development for the human race. However intensive agricultural production, by modifying biodiversity has an adverse impact on the natural environment. Because agricultural activities occupy 85% of Turkey's land area there is constant conflict with policies that pursue nature conservation, in particular with villages in rural Turkey that are in the forested regions.

Our agro-ecology project in certain of these regions, by establishing productive and sustainable livestock production systems will reduce reliance on timber products while improving the socio-economic level of the dwellers. The initiative will aim to reduce and may in fact reverse the mass migration away from these villages to the urban centers that has occurred over the past three decades in regional Turkey.

One of the main challenges will be to overcome the generally accepted view that animal production and forests can't co-exist. The agroforestry principles to be adopted in the program have had successful results in numerous diverse global locations.

The proposed production system will also have a direct beneficial impact in carbon emission rates due to utilization of resource efficient principles. The few carbon sequestering forests that still remain in Turkey will be better maintained as the populations living in and around them will no longer be solely reliant on products from them.

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