PREFACE

We are currently breathing in a time of unsurpassed alteration and when concern for the environment has never been bigger. Deterioration of river basin ecology due to unexpected modification in morphological behavior of the river is one of the most important issues of current concern. Even though it is the function of human activity in such issues that is of most concern, this activity affects the operation of the natural processes that occur within the physical environment. Most of these processes and their effects are researched in the domain of fluvial-geomorphology. Key stress in geomorphology over the precedent more than a few decades has been on the expansion of quantitative physiographic methods to portray the evolution and behavior of surface drainage networks. The quantitative analysis of morphometric parameters is found to be of immense utility in river basin evaluation. The influence of drainage morphometry is very important in accepting the landform processes, soil physical properties and erosional characteristics. Drainage characteristics of many river basins and sub-basins in different parts of the globe have been studied using conventional methods.

The Rayeng River is small Himalayan tributary of the great Tista. The Rayeng River System (26°54′41′′ N to 27°02′11′′ N and longitudes of 88°18′20′′ E to 88°27′33′′E) meeting the Tista River from the right bank in Darjeeling District. The approximate area of the Rayeng River System is 145.50 sq. km. Though significant portion of the basin is virgin, but in many part of the basin, geomorphic and ecological condition has been changed due to anthropogenic activities. To study the geomorphic characteristics of the Rayeng Basin, whole study has been divided in to nine chapters.

Chapter I of this thesis paper deals with about the aims and objectives, scope, methodology, hypothesis of the study, introduction and the problems of the study area.

Chapter II introduces the physical set up of the basin i.e., geomorphology, geology, soils, climate and vegetation of the Rayeng Basin.

Chapter III incorporates the morphometric analysis of linear, areal and relief aspects of the basin.

Chapter IV deals with correlation coefficient matrix of the various parameters of the basin. Relation among different morphometric attributes has been analysed.

Chapter V deals about the assessment of soil erosion of the Rayeng Basin. Assessment of soil erosion has been computed on the basis of 'USLE' method. Remedial measures of soil erosion are also discussed.

Chapter VI includes problems of landslides of the basin. In this chapter landslide susceptibility zones has been identified. Remedial measures of landslides are also suggested in this chapter.

Chapter VII incorporated with the study of effect of environmental degradation in Rayeng Basin. Suggestion concerning the mitigation of environmental degradation has been recommended.

Chapter VIII deals with the study of resource potentiality of the basin. In this chapter ways for resource management have been discussed.

Chapter IX is concerning the conclusion of the study and recommendation for the overall management of the basin has been suggested.

Sanjoy Saha

(Sanjoy Saha)

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