CHAPTER II
AIMS AND OBJECTIVES

Statement of Problem
With addition of altitudes, the bio-physical gradients start differing which in turn brings changes in diversity, distribution and abundance of insect species at varying altitudinal ecosystems. Bio-physical gradients mainly floral components, altitude and temperature are responsible to bring changes in species community. Rainfall and temperature act directly upon to flourish vegetation thus affecting the distribution of insects in a certain locality. So insect species and bio-physical gradients are inter-related phenomenon. This not only increases diversity richness but also limits distribution of insect fauna.

Being an insect, this fact is also true for butterfly species with regards to their diversity and distribution. How the butterflies are distributed at various ecosystems and their species richness in Nepalese Himalayas, the largest altitudinal gradient in the world is a matter of extensive research in the present context. The same altitudinal range at different mountains within the same region also differs in diversity, distribution and abundance of species. The distribution and abundance of species in association with biophysical gradients was not studied except taxonomy and altitudinal limits of butterfly species of this country. It has been considered that the biophysical gradients are more responsible to regulate distribution and control diversity of butterflies in changing altitudinal ecosystems. So this study is related to this fact of gradients effect on diversity and distribution.

Hypothesis
This research has been aimed to test the following hypothesis.

Hypothesis I- Change in butterfly diversity at different altitudinal levels.

Hypothesis II- Bio-physical gradients in correlation to species distribution at varying altitudes of central Nepal.
Objectives

- Documentation of butterfly diversity at different altitudinal zonation of Central Nepal.
- Assessment to biophysical gradients correlating to diversity at vertical ecological zones.
- Assessment to threat factors and status of butterflies based on IUCN Redlist.

Rational of Study

The altitudinal variation and geographical complexity in Nepal display various types of habitats, differing vegetation and changing climatic condition. This study encompasses all these features where distribution and diversity of butterflies are differentiated interestingly upon the influence of of the biophysical gradients. The lower belt at vertical range is under the influence of warm and humid climate provides high diversity mostly of oriental species while higher elevation with Himalayan bioclimatic zone is less diverse for butterflies due to decreased vegetation components and less favourable climatic condition. Only few robust species which are specialized to such situation are found there.

The changing ecosystem across various pockets of the elevation accommodates butterflies which are specific to that ecosystem. The varying latitudes and longitudes also display diversity differences of butterflies. Changing temperature and humidity do have their own diversity preferences.

Though many studies on Nepalese butterflies were conducted in the past but none addressed to the above mentioned objectives and mentioned gradients which influence distribution and diversity of butterflies. Nepal has the highest altitudinal gradients in the world, so this study has been expected to provide significant research reference with regards to butterflies occurring at various altitudinal pockets of the country.