ABSTRACT

The Daphar reserve forest, located at the Tehsil Malakwal of district Mandi Bahauddin is a declared wildlife sanctuary under the Punjab Wildlife Act, 1974. The wildlife sanctuary, which spreads over 7126 acres is inhabited by a large variety of fauna and flora. The limited research conducted at the reserve forest has exclusively focused on the large vertebrates while ignoring the insect population. The present study focuses on the community structure and diversity of the web building spiders at the reserve forest. Spiders play a critical role in ensuring the balance of food chain, as well as indicators of anthropogenic stress. The study area was surveyed by dividing it into four straight line transects and sampling from January to July through visual search method. As the straight line transects passed through disturbed (Eucalyptus plantation) and undisturbed areas (Mulberry plantation and wildlife cannabis growth), the study provided a comparison regarding the impact of anthropogenic stress on spider diversity and population. Moreover, the web building behavior was also analyzed by noting various web parameters such as mesh height, number of spirals and radii, capture area etc. The analysis of these parameters would provide an insight into the concept of resource partitioning. The results acquired from the study showed that the maximum spider population and diversity was present in the undisturbed area as compared to the disturbed. The population and diversity also increased with an increase in temperature due to favorable environmental conditions. The data was subjected to diversity indices i.e. Simpson diversity index, Shannon diversity index and Pielou richness, in order to determine the specie richness and evenness of spider population. The maximum values of these indices were obtained from the undisturbed area. Moreover, the evaluation of web parameters showed that the web building spiders use vertical stratification and changes in web parameters to minimize niche overlap and partition the available resources. On the basis of the acquired results, it is evident that the spider population is an excellent indicator of anthropogenic stress. They can be used for long term studies on the impact of human activities on natural habitats. Moreover, the study of web building behavior also provided a useful insight into the concept of niche differentiation and resource partitioning among spiders.