ABSTRACT

The present taxonomic study entitled "Taxonomy and distribution of genus *Ophiorrhiza* L. (Rubiaceae) occurring in Assam" reported a total of 8 species and 2 varities. In the present study, most of the taxa were found in the moist and shady places, majorly in the forest floors of North Lakhimpur, Karbi Anglong, Dima Hasao, Cachar and some parts of Kamrup (M). The species were mostly occurs in mountain terrains, hilly slopes. Occurrences of the species were recorded up to an elevation of 1000 m in the study area but the majority of the species were traced in the altitudinal range of 200-600 m. Majority of the species flowers from the month of April to June.

In the present study, 3 species were found to have significant distribution record. *Ophiorrhiza fasciculata* have been collected for the first time from the study area, it was a new addition to the state. Out of the 10 taxa, 2 species are endemic to North-East India. *Ophiorrhiza tingens* was also collected from the study after many years, it was collected 83 years ago from Nowgong. The present study also recorded additional morphological peculiarities among some of the species. Vivipary was observed for the first time in *Ophiorrhiza rugosa*. Two distinct kind of style were reported in *Ophiorrhiza tingens.*

Foliar micro morphological and anatomical studies of 10 taxa were carried out to facilitate the easy identification and clarification of taxonomic complexities among the species. Both light microscopy and SEM study of foliar epidermis of 10 taxa have done to provide taxonomic details of the species. Several important features like stomatal types and sizes, nature and sizes of epidermal cell, stomatal pore, subsidiary cell sizes and stomatal Index were observed with significant differences among the taxa. Nature of trichomes and raphides were also found to be diagnostic characters among the investigated taxa. Taxonomic keys based on macro morphology, micro morphology were provided for easy identification of the taxa. In order to determine the significance level, statistical analysis was done based on the numerical values, the results provides highly significantly difference among the investigated taxa. Leaf architectural and stem anatomical studies of 10 investigated taxa were carried out to provide comparatives studies among taxa with proper taxonomic assessment. Presence of calcium oxalate and raphides as observed in some of the cross sections of the stem were found to be important features in the members of the genus. The MaXent modelling algorithm was used to identify suitable areas and habitat for the reintroduction of species and to provide effective conservation measures of two threatened species of North-East India. The model helps to identified various forest areas and different places in Assam that have suitable environmental conditions for plant reintroduction in the natural habitat.