Conclusion

CONCLUSIONS

- One of the major objectives of the study was to prepare a digital database of herbaceous plants of Baroda and environs. The digital database contains details of 465 plant species belonging to 74 families in HTML format.

- Study reported plant species, *Aeschynomene villosa* Poir. which is a new report for India. It was confirmed by BSI, Calcutta.

- The sample study conducted in the 6 sites in the sub areas of Baroda (Nandesari, IPCL, Laxmi Vilas Palace & Timbi) and Savli (Mevli & Goral), which were selected on the levels of anthropogenic activities and their disturbance intensities to monitor the changes coming up in the vegetation growth pattern and composition due to above-mentioned pressures. Based on the disturbance gradient and anthropogenic pressure levels, the phenological cycle of the herbaceous plants varied In more disturbed sites i e. Nandesari and IPCL, species richness and number of dominant species in the community was less compared to less disturbed sites. Life cycle duration of the plant growing at Nandesari and IPCL was curtailed compared to other sites. Moreover the reproductive phase at these sites started early and was of shorter duration as compared to those with lesser disturbed sites. Plants tried to wind up their reproductive phase to minimize their exposure to stress conditions in the disturbed sites. Because of high grazing pressures plants at Nandesari and IPCL showed morphological variations which included stunted growth compared to that of plants growing in other undisturbed sites. The effect of industrial pollution was observed on the floral coloration and vegetative texture in the sites at Nandesari and IPCL. The floral coloration was found faded and the leaf showed

browning and loss of pigmentation which is a mere effect of industrial pollution

- Phenotypic variations were noted amongst the plants growing in Baroda and Savli region. The two regions varied in the microenvironmental conditions because of the disturbance levels. Effect of microenvironmental conditions on herbaceous plants was observed in the height characteristics and corresponding reproductive output. Plants of Savli region were taller with bigger foliage compared to plants of Baroda Correspondingly the reproductive output was also found more in plants growing at Savli region.

- There existed 98% similarity in the species variety but a major difference existed in the densities of these species Percentage of plants occurring with high density were more in Savli region compared to Baroda region where as percentage of plants occurring with moderate and low density was high in Baroda region compared to Savli region This was the effect of higher fragmentation prevailed in the available wild habitats in Baroda region due to high human population rates, high degree of industrialization, urbanization, commercialization and other anthropogenic pressures.

- Metapopulation study has resulted in identifying three ranges of metapopulation structure – broad, moderate and narrow. The plants falling in broad range inhabited a wide range of habitats in the study region and found to have high probability to continue through generations. Even if one of the habitat is fragmented or disturbed or destroyed, then the continuity of those plant is persevere through the other range of habitats. The plants falling in the moderate range of metapopulation were distributed in specific habitat across the area but their status in that specific habitat was very high. The probability of these plants to continue is secured in a particular region until the specific habitats are protected The disturbance or destruction of habitat might

result in lowering down the population composition of this particular group of plants. The plants with narrow range of metapopulation were those which were seen growing in a specific habitat or were distributed in a narrow pocket of a particular region only with meager density. The extinction risk of this group of plants is high as the disturbance, fragmentation or clearance of that particular habitat might result in disappearance of these plants from the region.

- Comparison of current records with past data of Baroda and Savli resulted in identifying the impact of changes in landuse pattern and meteorological parameters since last 4 decades It resulted in the shift of reproductive phase initiation and curtailing the reproductive period in the herbaceous plants growing in Baroda region. High amount of land conversion in residential, industrial and commercial areas and has resulted in density shifts and local extinction of good number of plants reported as rare in the previous records. The changed characters are seen to continue with uniformity during the three years of the study

- The plant species possessing a group of characteristics like habitat unspecific, longer duration of flower opening, life cycle of more then 6 months duration, smaller size of flower and seeds, variety in associated species, climbing nature, rooting at nodes, etc. are found to continue with high density since generations.

- Herbarium comparison with past records was done for the plant species which had shown a steep decline in density compared to past records. The study reported that sizeable number of plants had shown reductions in size and number of flower, fruit & seed, in the size of plant, in branching pattern, finally affecting the size of population. These reasons might have eventually resulted in declining the population by lowering down the reproductive out put resulting in the density decline of plants in the region Past records depict that the plants were growing in sizeable populations in the reported localities which were continuous (un-

fragmented). The same areas are now showing high amount of fragmentation due to developmental activities and are influenced by high levels of disturbance which is the probable reason for the isolation of population of the plants The effects of isolation and change in microenvironmental conditions have resulted in peripheral populations diverging from central populations both morphologically and genetically. This might have led to lower levels of gene flow between populations Populations with very low levels of variability and adaptability to evolve for changing environmental conditions, including climate change has resulted in altering morphological characters, lowering reproductive output and reducing the population size.