Task 10: Local Area Study

**Study an area and provide recommendations for improving it as an environmental area.**

Aspects for Consideration:

* Local Area : Site details and Characteristics; observe the surroundings, note any geographical features (such as slope, aspect, soil type), features constructed by humans, the type and density of vegetation, the presence of any water bodies, the amount of sunlight that penetrates and reaches the ground and general weather conditions.

Write a general description of the ecosystem. Include the main physical and biological features. Show the location of your study area on a map; draw a more detailed scale map of the area. Draw a map showing the cover area of the trees. How would you name this ecosystem? What criteria did you use in the naming of this ecosystem?

* Environmental factors in the ecosystem: Identify the environmental factors of influence in the area. Categorise the abiotic and biotic factors. Record some measurements to provide evidence of the factors present that influence the organisms living there. Collect, present and discuss the relevance of the data. How do the abiotic factors influence the biotic components? How do the biotic factors influence the abiotic factors?
* Identification of organisms present within ecosystem: Use sampling techniques and classification keys to identify the plants and animals found within this area. Identify the techniques used and construct a list of the organisms present. Classify each organism according to its ecological role. Construct a food web showing the inter relationship of these organisms. Where any other categories of organisms found? Look at the leaf litter and soil. Discuss their role and relevance to maintaining the equilibrium of the ecosystem.
* Population dynamics: Discuss the species diversity present within the ecosystem. How abundant are the species and how are they distributed throughout the area. What factors limit the number/ distribution of species present? Consider density dependent and density independent factors and carrying capacity. Apply to chosen area.
* Plants: Use transect lines throughout the area to record which plant species are present. Construct a profile diagram or “side view” of the vegetation along this line. Take care with your choice of scale on the axis so that the drawing is not too distorted. What are the key abiotic factors that affect plant distribution? Which factors are relevant and apply to this ecosystem. How have the plants adapted to survive in this particular habitat? Do the plants show any particular adaptations for pollination, germination or dispersal? Can these adaptations be related to the abiotic or biotic factors present in the environment?
* Weeds: What is a weed? Is there any evidence of weed encroachment in your study area or on adjacent land? Is the distribution of weeds random or is there a pattern? Choose a particular weed species that you want to count. Try to identify it. Use quadrats to estimate the population density of this weed species. Calculate and record the average number of weeds per quadrat. Calculate the average weed density per m2 Use this data to estimate the total population of the weed in the area. Describe the method used and present the relevant data in the appropriate format. Investigate the spread of this weed into the surrounding areas. Propose a management strategy for the control of weeds and other pest species.
* Animals: Note the habitat preference of each animal. From your direct observations and further research, state the following for each animal found in your study area; where it was found, what it was feeding on, how it catches its food, how it avoids predators, any adaptations that facilitate its survival in this ecosystem, which abiotic factors limit its abundance and distribution?
* Decomposers: Find and identify organisms found in leaf litter samples. Investigate the role and effects of decomposer organisms in this ecosystem. Find out about the feeding habits of some of the organisms you have identified and attempt to construct food webs for the litter and soil ecosystems. Do the food webs include any organisms not found in the leaf litter? Leaf litter on a forest floor has been compared with the tiles on a roof. Do you think this is a good analogy? Give your reasons. Make a list of the environmental factors that you think would have a significant impact on soil and litter organisms. Suggest how the impacts of one of these factors could be measured or monitored accurately over an extended period of time.
* Human Impact: Identify the human impact in this area. Look at the wider area in the vicinity to consider the overall impacts that might affect this ecosystem. Look at the regional use of land in the immediate vicinity to help identify possible impacts caused by humans. Consider recreation, roads, introduction of exotic species for example. What recommendations could you put to the owners of land, (considering the local council regulations and laws for this city) to maintain and improve the health of this ecosystem.

Marking Key: 30 Marks

Individual : Teacher Anecdotal Daily Participation : 15 Marks

1. No effect at all
2. Often off-task
3. Involved but half-hearted
4. Mostly engaged but seen off-task
5. Fully engaged and participating

Presentation: Group Mark : 15 Marks

Limited detail, largely incomplete, poor quality

Sufficient detail, some gaps, average quality

Detailed, complete, presentable