

FLORAL DIVERSITY DURING SUMMER MONTHS ON VIDYA PRASARAK MANDAL'S JNANADWEEP CAMPUS, THANE (MAHARASHTRA), INDIA

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ABSTRACT: Flora of Vidya Prasarak Mandal's college campus, Thane, was studied for three consecutive years, from 2019 to 2021. In the present paper natural as well as cultivated flora of summer season (January - April) is documented. A total of 152 plants of different species belonging to 70 plant families were observed in the month of January - April in VPM's campus. In a college campus of 13.5 acres, out of 152 plants of different species, 48 herb species, 14 climber species, 34 shrub species and 56 tree species have been recorded and referring to IUCN, the status of *Zamia* spp and *Thuja* spp. is near threatened and the status of *Saraca asoca* and *Terminalia neotaliala* is vulnerable.

KEY WORDS: VPM's, Jnanadweep campus, floral diversity, summer season, flora, herbs, climbers, shrubs, trees, IUCN.

INTRODUCTION

Floral diversity can be termed as a diversity of plants occurring in a specific region during a particular period (ENVIS, 2021). Flora by definition consists of all plant forms, it includes vascular as well as non - vascular plants. Among all plant forms, Angiosperms are the most diverse and dominant living group exhibiting a variety of habits such as herbs, shrubs, trees, climbers, epiphytes (Chanderbali *et. al.*, 2017). Flora of any given region can be studied by simple methods like survey, quadrant method, transect method etc. Survey and documentation of floral diversity is important from an identification point of view and it also helps in maintaining and conserving vegetation (Uniyal and Singh, 2013).

Study area: The study was carried out at Vidya Prasarak Mandal's Jnanadweep campus, which is located on the bank of Thane creek, near Thane railway station and a bus terminus (CIDCO bus stop) (Plate 1). Rapid urbanization has caused rampant encroachment around the college campus. VPM, Thane campus, established in 1935 was originally an island surrounded by creek water from three sides. Due to land reclamation now, we see the creek flowing only on one side of the campus. A 750meter long Jnanapath (Knowledge path) runs along the border of the

campus. The campus is spread across 13.5 acres of land with a thick cover of plants including various species of herbs, shrubs and trees (Deshmukh *et. al.*, 2020). The campus has a large diversity of natural as well as cultivated plants (Kolet *et.al.*, 2013). Area around college buildings shows wide floral diversity. In the summer months, it was observed that annual herbs complete their life cycle and dry up. The gardener usually removes weeds, dried annual herbs and climbers before monsoon. It was noted that these weeds, annual herbs and climbers reappear every year. Shrubs and trees are least affected by seasonal variation however, land reclamation and construction work in and around college campus affects them to some extent. As the campus is situated on the banks of Thane creek, there is a presence of mangroves and mangrove associated plants along the boundary wall. Floral diversity was studied in VPM college campus, Thane, for three consecutive years (2019 to 2021). In the present paper natural as well as cultivated flora of summer season (January - April) is documented.

MATERIALS AND METHODS

From the month of January to April, for three consecutive years (2019 to 2021), the entire Vidya Prasarak Mandal's campus was studied for floral diversity. The study included investigation based on the survey method. The study area was divided into ten zones.

Zone 1: Jnanapath (Knowledge path)

Zone 2: Area around VPM's Polytechnic college (Building no. 1)

Zone 3: East and West side of Building no. 2-6

Zone 4: South side of Building no.7

Zone 5: Area around Canteen/ Auditorium

Zone 6-10: Front and back of building no. 2-6

Frequent trails (once a week) were conducted to understand the summer flora of Vidya Prasarak Mandal's Jnanadweep campus. The study was conducted for three consecutive years (2019, 2020 and 2021). Survey method was practiced for a collection of data. The data was recorded by taking photographs. The habit and habitat of the plants found were noted, the status of the plant was also observed. The plants were grouped into four categories *viz.*, herbs, climbers, shrubs and trees. Different stages of plants observed in four months are reported in Table 1, as the status of the plant. The status of the plant is divided into six categories *viz.*, vegetative, flowering, fruiting,

drying, fall colours and shedding leaves. Table 1 also includes the status of the plants according to the red list categories of International Union for Conservation of Nature (IUCN) i.e DD-Data deficient, LC-Least concern, NT-Near threatened, VU-Vulnerable, EN-Endangered, CR-Critically endangered, EW-Extinct in the wild, EX-Extinct. The status of the plants not included in the IUCN list is labeled as NA - Not assessed (Table 1).

Flora was identified on the field as well as in the laboratory of the Department of Botany of VPM's B. N. Bandodkar college of Science (Autonomous), Thane with the help of standard literature like Cooke's flora. Our method included surveying and collecting literature by internet search.

RESULTS AND DISCUSSION

This paper includes plants observed in the month of January - April. A total of 152 plants of different species belonging to 70 plant families were observed in VPM's Jnanadweep campus. A total of 48 herb species, 14 climber species, 34 shrub species and 56 tree species have been recorded consecutively for three years.

The herbs observed in the month of January - April were from 29 different plant families. (Figure 1). Asteraceae showed maximum species diversity during January - April months (Table 1). Species of Asteraceae like *Cyanthilliumcinereum*, *Sphagneticolatrilobata*, *Synedrellanodiflora* had completely covered Zone: 4 and Zone: 6 - 10 (Plate 2). *Cyanthilliumcinereum* and *Synedrellanodiflora* started drying up towards the end of April. In herbs, members of Amaranthaceae, Euphorbiaceae and Poaceae were also well represented.

The Climbers observed in the month of January - April were from 11 different plant families (Figure 2). The status of the climbers in these four months for three consecutive years was mostly vegetative and flowering. *Cuscutacampestris*, the parasitic climbing plant, had spread in the campus in spite of it being removed on several occasions. Flowering and fruiting were observed during the observation period. *Bougainvillea glabra* producing bracts of five different colours was observed in college campus (Plate 2).

The shrubs observed in the month of January - April were from 22 different plant families. Euphorbiaceae and Rubiaceae have shown the maximum number of species followed by Acanthaceae and Apocynaceae (Figure 3).

The shrubs reported in college campus were mostly cultivated species, found either in various zones of the college campus or as potted plants. There were however several naturally growing shrubs viz., *Carissa carandas*, *Calotropis gigantea*, *Ricinus communis*, *Flueggea leucopyrus*, *Salvadora persica*, *Solanum diphyllum* (Plate 2).

Salvadora persica is an associate mangrove plant which was sighted along the boundary wall in Zone: 1. *Solanum diphyllum* was totally covered by yellow berries during the month of February and March in all three years. *Solanum diphyllum* was reported in Zone: 2 and 3. *Calotropis gigantea* and *Ricinus communis* were flowering and fruiting in the month of January - March. *Flueggea leucopyrus* was covered with snow white berries and found in Zone:1 in the month of January - February. Cones were observed in the cultivated shrub species of *Zamia* in February, 2019 (Plate 2).

The trees observed in the month of January - April were from 29 different plant families. Caesalpiniaceae family showed maximum species diversity during January - April (Figure 4). *Areca catechu* in Zone: 3 was fruiting in February - March, 2021. *Sterculia foetida* has shown to complete its flowering and fruiting during the observation months. The fruits were dried till the end of April. Seeds of *Sterculia foetida* were collected from the ground in the month of March, 2021. A specimen tree of *Lagerstroemia speciosa*, the State flower of Maharashtra is reported from campus in Zone: 2. Flowering in young trees of *Cassia fistula* was observed in the month of April in Zone: 5 for three consecutive years.

Terminalia neotaliala in Zone: 4 approximately 12 ft tall was relocated due to construction of a boundary wall in 2020. It was observed from January to April, 2021 the tree survived and produced new branches (Plate 2). A specimen tree of *Strychnos nux-vomica*, is reported from Zone: 1. The tree is in the juvenile stage and yet to produce flowers. *Nux vomica* trees produce highly poisonous seeds. Flowering was observed in *Ehretia laevis* from January to April (Plate 2).

Natural as well as cultivated vegetation is important in order to maintain balance of biodiversity. Trees are highly important due to their ecological, socioeconomic and cultural role. Trees provide habitat for at least half of Earth's terrestrial biodiversity (Millennium Ecosystem Assessment, 2005), giving shelter to 80% of amphibian, 75% of bird and 68% of mammal species (Vié *et al.*, 2009). Conservation and maintenance of local flora helps in attracting a

number of insects, butterflies and reptiles thereby supporting the biodiversity and soil health. The butterfly garden in VPM Thane campus with 27 species of food plants accounts for the diversity of butterflies. In a study 52 species of butterflies were identified from the campus (Kurve *et al.*, 2013). In our study, we also came across fauna diversity which included ants, spiders, termites, grasshoppers, bagworm, snakes, rats, squirrels, mongoose, garden lizards and native as well as migratory birds.

VPM Thane campus is spread across 13.5 acres of area and has shown 152 plants of different species during the month of January to April. Out of 152 different plant species, *Zamia* spp, a gymnosperm commonly called cardboard palm, according to IUCN has a status of near threatened (Plate 2). Out of 56 tree species in campus, the status of *Thuja* spp. is near threatened and the status of *Saraca asoca*, *Terminalia neotalialis* is vulnerable according to IUCN (Plate 2). It has been shown that less than 8% of terrestrial plants have been assessed. 30–44% of assessed plant species are threatened according to regional assessments (Bachman *et al.*, 2018). Out of all assessed species 63% cycads, 34% conifers, 33% reef-building corals, 41% amphibians, 14% bird and 25% mammal species are threatened (IUCN, 2020).

Every day the campus has a footfall of approximately 12000 students and 1500 teaching and non-teaching staff. Habitat loss caused due to anthropogenic activities is one of the primary threats to biological diversity (Giam, 2017). In the present study it was observed that in spite of all adversities, floral diversity is maintained in VPM Thane campus.

CONCLUSION

The landscape of the VPM campus is home to seven buildings, one canteen/ auditorium and natural as well as cultivated gardens. The campus is in close vicinity of mangrove vegetation growing along the creek. There is regular traffic and pollution due to vehicles along the campus. Small shops, hutments have encroached the surrounding area. The campus witnesses the footfall of approximately 12000 students and 1500 teaching and non-teaching staff. Despite anthropogenic activities, which is one of the primary threats to biological diversity, the present study shows that the campus has managed to maintain floral diversity. This has been possible due to restricted entry inside VPM campus and proper maintenance of plants.

A total of 152 plants of different species belonging to 70 plant families were observed in the month of January to April in Vidya Prasarak Mandal's Jnanadweep campus. Out of 152 plants of

different species, 48 herb species, 14 climber species, 34 shrub species and 56 tree species have been recorded consecutively for three years. Near threatened species are those which are in threat of becoming vulnerable in the near future, and out of 34 shrub species, the status of *Zamia* spp is near threatened. Vulnerable species are those which are on the verge of extinction in the near future. Out of 56 tree species, *Thuja* spp. is near threatened and the status of *Saraca asoca*, *Terminalia neotaliala* is vulnerable.

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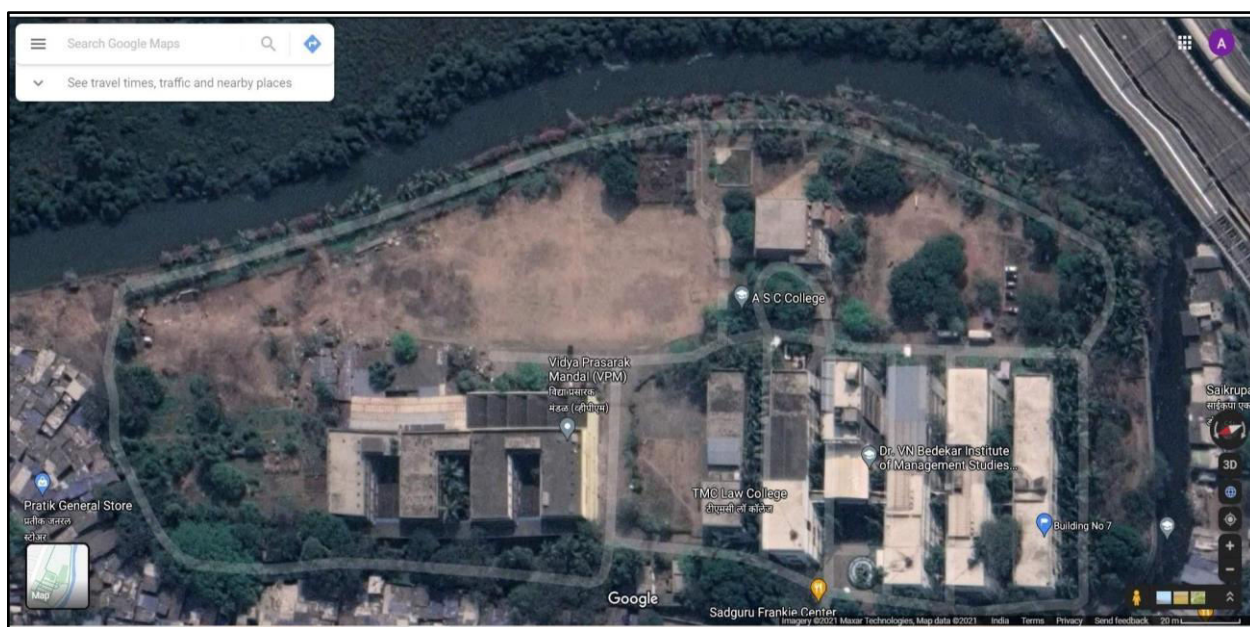


Plate 1: Vidya Prasarak Mandal 's Jnanadweep campus, Thane, Maharashtra India.

Table 1: List of Plants with families, habit, habitat and status. Abbreviations: NA - Not assessed, The IUCN Red List Categories -DD-Data deficient, LC-Least Concern, NT-Near threatened, VU-Vulnerable, EN-Endangered, CR-Critically endangered, EW=Extinct in the wild, EX-Extinct

Sr. no.	Name of plant	Common name	Family	Habit	Habitat	Status	
1.	<i>Asystasia gangetica</i>	Ganges primrose	Acanthaceae	Herb	Terrestrial	Flowering	NA
2.	<i>Ruellia tuberosa</i>	Ruvel	Acanthaceae	Herb	Terrestrial	Vegetative	NA
3.	<i>Crossandra infundibuliformis</i>	Aboli	Acanthaceae	Herb	Terrestrial	Flowering	LC
4.	<i>Achyranthes aspera</i>	Dativan	Amaranthaceae	Herb	Terrestrial	Flowering	NA
5.	<i>Amaranthus spinosus</i>	Katemath	Amaranthaceae	Herb	Terrestrial	Flowering	NA
6.	<i>Alternanthera sessilis</i>	Kanchari	Amaranthaceae	Herb	Terrestrial	Flowering	DD
7.	<i>Celosia argentea</i>	Cock's comb	Amaranthaceae	Herb	Terrestrial	Vegetative	LC
8.	<i>Hymenocallis littoralis</i> Syn: <i>Pancratium americanum</i>	Spider lily	Amarylidaceae	Herb	Terrestrial	Vegetative	NA
9.	<i>Catharanthus roseus</i> Synonym: <i>Vinca rosea</i>	Sadaphuli	Apocynaceae	Herb	Terrestrial	Flowering	NA
10.	<i>Syngonium podophyllum</i>	Syngonium, arrow head	Araceae	Herb	Terrestrial	Vegetative	NA
11.	<i>Pistia stratiotes</i>	Water cabbage	Araceae	Herb	Aquatic	Vegetative	LC
12.	<i>Dracaena angolensis</i> Synonym: <i>Sansevieria cylindrica</i>	Spear sansevieria	Asparagaceae	Herb	Terrestrial	Vegetative	NA
13.	<i>Dracaena trifasciata</i> Synonym: <i>Sansevieria trifasciata</i>	Snake plant	Asparagaceae	Herb	Terrestrial	Vegetative	NA
14.	<i>Aloe vera</i>	Korphad	Asphodelaceae	Herb	Terrestrial	Vegetative	NA
15.	<i>Cyanthillium cinereum</i> Synonym: <i>Vernonia cinerea</i>	Sahadevi, little ironweed	Asteraceae	Herb	Terrestrial	Flowering, Fruiting	NA
16.	<i>Sphagneticola trilobata</i> Synonym: <i>Wedelia trilobata</i>	Creeping daisy	Asteraceae	Herb	Terrestrial	Flowering, Fruiting	NA
17.	<i>Synedrella nodiflora</i>	Cinderella weed	Asteraceae	Herb	Terrestrial	Flowering	NA
18.	<i>Tridax procumbens</i>	Coat button	Asteraceae	Herb	Terrestrial	Flowering, Fruiting	NA
19.	<i>Eclipta prostrata</i>	Bhringraj	Asteraceae	Herb	Terrestrial	Flowering, Fruiting	LC
20.	<i>Cardamine impatiens</i>	Bittercross	Brassicaceae	Herb	Terrestrial	Flowering, Fruiting	NA

21.	<i>Ananas comosus</i>	Pineapple	Bromeliaceae	Herb	Terrestrial	Flowering	NA
22.	<i>Senna tora</i> Synonym: <i>Cassia tora</i>	Takla	Caesalpiniaceae (Leguminosae - Caesalpinae)	Herb	Terrestrial	Vegetative	NA
23.	<i>Canna indica</i>	Kardal	Cannaceae	Herb	Terrestrial	Flowering	NA
24.	<i>Sieruela ruidosperma</i> Synonym: <i>Cleome ruidosperma</i>	Niltilwan	Cleomaceae	Herb	Terrestrial	Vegetative	NA
25.	<i>Commelina benghalensis</i>	Bengal dayflower	Commelinaceae	Herb	Terrestrial	Flowering	LC
26.	<i>Tradescantia spathacea</i> Synonym: <i>Rhoeospathacea</i>	Moses in the cradle	Commelinaceae	Herb	Terrestrial	Flowering	NA
27.	<i>Kalanchoe pinnata</i> Synonym: <i>Bryophyllum pinnatum</i>	Canterbury bells	Crassulaceae	Herb	Terrestrial	Fruiting	NA
28.	<i>Cyperus rotundus</i>	Nutgrass	Cyperaceae	Herb	Terrestrial	Vegetative	LC
29.	<i>Euphorbia hirta</i>	Asthma plant	Euphorbiaceae	Herb	Terrestrial	Flowering	NA
30.	<i>Phyllanthus amarus</i> Synonym: <i>Phyllanthus niruri</i>	Bhuiavla	Euphorbiaceae	Herb	Terrestrial	Vegetative	NA
31.	<i>Jatropha podagrica</i>	Australian bottle plant	Euphorbiaceae	Herb	Terrestrial	Vegetative	NA
32.	<i>Chrozophora rottleri</i>	Suryavarti	Euphorbiaceae	Herb	Terrestrial	Flowering	NA
33.	<i>Crotalaria juncea</i>	Indian hemp	Fabaceae	Herb	Terrestrial	Flowering	NA
34.	<i>Zornia quilonensis</i>	Kollam zornia	Fabaceae	Herb	Terrestrial	Flowering	DD
35.	<i>Hydrilla verticillata</i>	Water thyme	Hydrocharitaceae	Herb	Aquatic	Vegetative	LC
36.	<i>Mimosa pudica</i>	Lajalu, Touch me not	Mimosaceae (Leguminosae - Mimosae)	Herb	Terrestrial	Vegetative	LC
37.	<i>Musa x paradisiaca</i>	Banana	Musaceae	Herb	Terrestrial	Flowering, fruiting	LC
38.	<i>Oxalis corniculata</i>	Ambati	Oxalidaceae	Herb	Terrestrial	Flowering	NA
39.	<i>Scoparia dulcis</i>	Sweet broom weed	Plantaginaceae	Herb	Terrestrial	Flowering	NA
40.	<i>Cynodon dactylon</i>	Durva	Poaceae	Herb	Terrestrial	Flowering	NA
41.	<i>Cymbopogon citratus</i>	Lemon grass	Poaceae	Herb	Terrestrial	Drying	NA
42.	<i>Paspalum distichum</i>	Knotgrass	Poaceae	Herb	Terrestrial	Vegetative	LC
43.	<i>Bambusa polymorpha</i>	Bamboo	Poaceae	Herb	Terrestrial	Drying	NA
44.	<i>Eichhornia crassipes</i>	Water hyacinth	Pontederiaceae	Herb	Aquatic	Vegetative	NA

45.	<i>Datura innoxia</i>	Datura	Solanaceae	Herb	Terrestrial	Flowering	NA
46.	<i>Strelitzia reginae</i>	Bird of paradise	Strelitziaceae	Herb	Terrestrial	Flowering	NA
47.	<i>Corchorus capsularis</i>	Jute	Tiliaceae	Herb	Terrestrial	Dried capsules	NA
48.	<i>Stachytarpheta indica</i>	Indian snake weed	Verbenaceae	Herb	Terrestrial	Vegetative	LC
49.	<i>Thunbergia erecta</i>	Bush clock vine	Acanthaceae	Climber	Terrestrial	Flowering	NA
50.	<i>Thunbergia grandiflora</i>	Bengal trumpet vine	Acanthaceae	Climber	Terrestrial	Flowering	NA
51.	<i>Aristolochia ringens</i>	Badakvel	Aristolochiaceae	Climber	Terrestrial	Vegetative	NA
52.	<i>Asparagus racemosus</i>	Shatavari	Asparagaceae	Climber	Terrestrial	Flowering	NA
53.	<i>Mansoa alliacea</i> Synonym: <i>Bignonia alliacea</i>	Garlic vine	Bignoniaceae	Climber	Terrestrial	Vegetative	NA
54.	<i>Combretum indicum</i> Synonym: <i>Quisqualis indica</i>	Rangoon creeper	Combretaceae	Climber	Terrestrial	Flowering	NA
55.	<i>Ipomoea trilobata</i>	Morning glory	Convolvulaceae	Climber	Terrestrial	Fruiting, drying	NA
56.	<i>Cuscuta campestris</i>	Amarvel	Convolvulaceae	Climber	Parasitic	Flowering, fruiting	NA
57.	<i>Lygodium</i> spp.	Climbing fern	Lygodiaceae	Climber	Terrestrial	Vegetative	LC
58.	<i>Tinospora cordifolia</i>	Gulvel	Menispermaceae	Climber	Terrestrial	Vegetative	NA
59.	<i>Cocculus hirsutus</i>	Vasanvel	Menispermaceae	Climber	Terrestrial	Vegetative	NA
60.	<i>Bougainvillea glabra</i>	Paper flower	Nyctaginaceae	Climber	Terrestrial	Flowering	LC
61.	<i>Clerodendrum thomsoniae</i>	Bleeding heart vine	Verbenaceae	Climber	Terrestrial	Vegetative	NA
62.	<i>Cissus quadrangularis</i>	Hadjodi	Vitaceae	Climber	Terrestrial	Vegetative	NA
63.	<i>Pseuderanthemum laxiflorum</i>	Purple false eranthemum	Acanthaceae	Shrub	Terrestrial	Flowering	NA
64.	<i>Ecbolium ligustrinum</i>	Ran aboli, Green ice cossandra	Acanthaceae	Shrub	Terrestrial	Flowering	NA
65.	<i>Barleria prionitis</i>	Porcupine flower	Acanthaceae	Shrub	Terrestrial	Flowering	LC
66.	<i>Cordyline fruticosa</i>	Red dracaena	Asparagaceae	Shrub	Terrestrial	Vegetative	LC
67.	<i>Nerium oleander</i>	Kaner	Apocynaceae	Shrub	Terrestrial	Flowering	LC
68.	<i>Carissa carandas</i>	Karvanda	Apocynaceae	Shrub	Terrestrial	Flowering, fruiting	NA
69.	<i>Tabernaemontana divaricata</i>	Tagar	Apocynaceae	Shrub	Terrestrial	Vegetative, Flowering	LC

70.	<i>Calotropis gigantea</i>	Mandaar, Crown flower	Asclepiadaceae (Apocynaceae)	Shrub	Terrestrial	Flowering, fruiting	NA
71.	<i>Dracaena fragrans</i>	Dracaena	Asparagaceae	Shrub	Terrestrial	Vegetative	LC
72.	<i>Caesalpinia pulcherrima</i>	Shankasur	Caesalpinaceae (Leguminosae - Caesalpiniae)	Shrub	Terrestrial	Flowering	LC
73.	<i>Cycas</i> spp.	Cycadaceae	Cycadaceae	Shrub	Terrestrial	Vegetative	NA
74.	<i>Ricinus communis</i>	Castor bean	Euphorbiaceae	Shrub	Terrestrial	Flowering, fruiting	NA
75.	<i>Euphorbia milii</i>	Crown of thorns	Euphorbiaceae	Shrub	Terrestrial	Flowering	LC
76.	<i>Manihot esculenta</i>	Cassava	Euphorbiaceae	Shrub	Terrestrial	Flowering	DD
77.	<i>Acalypha hispida</i>	Cat's tail	Euphorbiaceae	Shrub	Terrestrial	Flowering, fruiting	NA
78.	<i>Heliconia rostrata</i>	Lobster claw	Heliconiaceae	Shrub	Terrestrial	Flowering	NA
79.	<i>Lawsonia inermis</i>	Mehndi	Lythraceae	Shrub	Terrestrial	Flowering	LC
80.	<i>Galphimia gracilis</i>	Gold shower	Malpighiaceae	Shrub	Terrestrial	Flowering	NA
81.	<i>Hibiscus schizopetalus</i>	Japanese hibiscus	Malvaceae	Shrub	Terrestrial	Flowering	NA
82.	<i>Calliandra haematocephala</i>	Powderpuff	Mimosaceae (Leguminosae - Mimosae)	Shrub	Terrestrial	Flowering	NA
83.	<i>Jasminum sambac</i>	Arabian jasmine	Oleaceae	Shrub	Terrestrial	Vegetative	NA
84.	<i>Flueggea leucopyrus</i>	Pandharpali	Phyllanthaceae	Shrub	Terrestrial	Fruiting	NA
85.	<i>Plumbago auriculata</i>	Nilachitrak	Plumbaginaceae	Shrub	Terrestrial	Vegetative	NA
86.	<i>Rosa indica</i>	Desi gulab	Rosaceae	Shrub	Terrestrial	Flowering	NA
87.	<i>Pavetta indica</i>	Indian pavetta	Rubiaceae	Shrub	Terrestrial	Flowering	NA
88.	<i>Gardenia jasminoides</i>	Anant	Rubiaceae	Shrub	Terrestrial	Vegetative	NA
89.	<i>Hamelia patens</i>	Firebush	Rubiaceae	Shrub	Terrestrial	Flowering	LC
90.	<i>Ixora coccinea</i>	Ixora, Rugmini	Rubiaceae	Shrub	Terrestrial	Flowering	NA
91.	<i>Citrus limon</i>	Lemon	Rutaceae	Shrub	Terrestrial	Terrestrial	NA
92.	<i>Salvadora persica</i>	Mirjoli	Salvadoraceae	Shrub	Terrestrial	Vegetative	LC
93.	<i>Solanum diphyllum</i>	Two leaf nightshade	Solanaceae	Shrub	Terrestrial	Flowering, fruiting	NA
94.	<i>Lantana camara</i>	Ghaneri	Verbenaceae	Shrub	Terrestrial	Flowering, fruiting	NA

95.	<i>Duranta erecta</i>	Golden duranta	Verbenaceae	Shrub	Terrestrial	Flowering	LC
96.	<i>Zamia</i> spp.	Cardboard palm	Zamiaceae	Shrub	Terrestrial	Producing cone	NT
97.	<i>Mangifera indica</i>	Mango	Anacardiaceae	Tree	Terrestrial	Flowering, fruiting	DD
98.	<i>Monoon longifolium</i> Synonym: <i>Polyalthia longifolia</i>	False ashok	Annonaceae	Tree	Terrestrial	Flowering, fruiting	NA
99.	<i>Annona squamosa</i>	Sugar apple	Annonaceae	Tree	Terrestrial	Vegetative	LC
100.	<i>Plumeria rubra</i>	Dev chafa	Apocynaceae	Tree	Terrestrial	Flowering	LC
101.	<i>Plumeria obtuse</i>	White frangipani	Apocynaceae	Tree	Terrestrial	Flowering	LC
102.	<i>Alstonia scholaris</i>	Saptaparnia	Apocynaceae	Tree	Terrestrial	Flowering, fruiting	LC
103.	<i>Cocos nucifera</i>	Coconut	Arecaceae	Tree	Terrestrial	Flowering, fruiting	NA
104.	<i>Areca catechu</i>	Areca nut palm	Arecaceae	Tree	Terrestrial	Flowering, fruiting	NA
105.	<i>Caryota urens</i>	Fishtail palm	Arecaceae	Tree	Terrestrial	Flowering, fruiting	LC
106.	<i>Livistona chinensis</i>	Chinese fan palm	Arecaceae	Tree	Terrestrial	Vegetative	NA
107.	<i>Dypsis lutescens</i>	Golden cane palm	Arecaceae	Tree	Terrestrial	Vegetative	NT
108.	<i>Tecoma stans</i>	Yellow bells	Bignoniaceae	Tree	Terrestrial	Flowering	LC
109.	<i>Tabebuia rosea</i>	Pink trumpet tree	Bignoniaceae	Tree	Terrestrial	Flowering	NA
110.	<i>Bombax ceiba</i>	Red cotton silk	Bombacaceae (Malvaceae)	Tree	Terrestrial	Flowering	NA
111.	<i>Ehretia laevis</i>	Dant rang	Boraginaceae	Tree	Terrestrial	Vegetative	DD
112.	<i>Delonix regia</i>	Gulmohar	Caesalpiniaceae (Leguminosae - Caesalpinae)	Tree	Terrestrial	Flowering, fruiting	LC
113.	<i>Peltophorum pterocarpum</i>	Sonmohar	Caesalpiniaceae (Leguminosae - Caesalpinae)	Tree	Terrestrial	Flowering, fruiting	NA
114.	<i>Cassia fistula</i>	Bahava	Caesalpiniaceae (Leguminosae - Caesalpinae)	Tree	Terrestrial	Flowering, fruiting	LC
115.	<i>Saraca asoca</i>	Sitaashok	Caesalpiniaceae (Leguminosae - Caesalpinae)	Tree	Terrestrial	Flowering	VU
116.	<i>Senna siamea</i>	Siamese cassia	Caesalpiniaceae	Tree	Terrestrial	Flowering	LC

			(Leguminosae - Caesalpinae)				
117.	<i>Tamarindus indica</i>	Imli, Chinch	Caesalpiniaceae (Leguminosae - Caesalpinae)	Tree	Terrestrial	Flowering	LC
118.	<i>Bauhinia purpurea</i>	Raktakanchan	Caesalpiniaceae (Leguminosae - Caesalpinae)	Tree	Terrestrial	Vegetative	LC
119.	<i>Carica papaya</i>	Papaya	Caricaceae	Tree	Terrestrial	Flowering	DD
120.	<i>Casuarina equisetifolia</i>	Suru	Casuarinaceae	Tree	Terrestrial	Vegetative	LC
121.	<i>Terminalia catappa</i>	Indian almond	Combretaceae	Tree	Terrestrial	Fall colours, leaf shedding	LC
122.	<i>Terminalia neotaliala</i> Synonym: <i>Terminalia mantaly</i>	Madagascar almond	Combretaceae	Tree	Terrestrial	Fall colours, leaf shedding	VU
123.	<i>Thuja</i> spp.	Morpankhi	Cupressaceae	Tree	Terrestrial	Vegetative	NT
124.	<i>Dalbergia sissoo</i>	Shisham	Fabaceae	Tree	Terrestrial	Vegetative	NA
125.	<i>Cinnamomum tamala</i>	Indian bay leaf	Lauraceae	Tree	Terrestrial	Vegetative	LC
126.	<i>Strychnos nux-vomica</i>	Kuda	Loganiaceae	Tree	Terrestrial	Vegetative	NA
127.	<i>Lagerstroemia speciosa</i>	Taman	Lythraceae	Tree	Terrestrial	Flowering	NA
128.	<i>Magnolia champaca</i>	Chafa	Magnoliaceae	Tree	Terrestrial	Vegetative	LC
129.	<i>Melia azedarach</i>	Bakannimb	Meliaceae	Tree	Terrestrial	Flowering, fruiting	LC
130.	<i>Azadirachta indica</i>	Neem, Margosa	Meliaceae	Tree	Terrestrial	Flowering, fruiting	LC
131.	<i>Albizia saman</i>	Rain tree	Mimosaceae (Leguminosae- Mimosae)	Tree	Terrestrial	Flowering	NA
132.	<i>Pithecellobium dulce</i>	Vilayati chinch	Mimosaceae (Leguminosae - Mimosae)	Tree	Terrestrial	Flowering, fruiting	LC
133.	<i>Acacia auriculiformis</i>	Earleaf acacia	Mimosaceae (Leguminosae - Mimosae)	Tree	Terrestrial	Vegetative	LC
134.	<i>Ficus racemosa</i>	Umbar	Moraceae	Tree	Terrestrial	Fruiting	LC
135.	<i>Ficus religiosa</i>	Pipal	Moraceae	Tree	Terrestrial	Fruiting	NA
136.	<i>Ficus bengalensis</i>	Vad, Banyan tree	Moraceae	Tree	Terrestrial	Fruiting	NA
137.	<i>Ficus benjamina</i>	Weeping fig	Moraceae	Tree	Terrestrial	Vegetative	LC

138.	<i>Artocarpus heterophyllus</i>	Jackfruit	Moraceae	Tree	Terrestrial	Vegetative	NA
139.	<i>Moringa oleifera</i>	Drumstick tree	Moringaceae	Tree	Terrestrial	Fruiting	LC
140.	<i>Syzygium cumini</i>	Jamun	Myrtaceae	Tree	Terrestrial	Flowering, fruiting	LC
141.	<i>Psidium guajava</i>	Guava	Myrtaceae	Tree	Terrestrial	Flowering	LC
142.	<i>Eucalyptus globulus</i>	Nilgiri	Myrtaceae	Tree	Terrestrial	Flowering	LC
143.	<i>Callistemon citrinus</i>	Bottlebrush	Myrtaceae	Tree	Terrestrial	Flowering	NA
144.	<i>Nyctanthes arbor-tristis</i>	Parijatak	Oleaceae	Tree	Terrestrial	Vegetative	NA
145.	<i>Ziziphus mauritiana</i>	Bor	Rhamnaceae	Tree	Terrestrial	Vegetative	LC
146.	<i>Morinda citrifolia</i>	Bartondi	Rubiaceae	Tree	Terrestrial	Fruiting	NA
147.	<i>Adina cordifolia</i> Synonym: <i>Haldina cordifolia</i>	Haldu	Rubiaceae	Tree	Terrestrial	Vegetative	NA
148.	<i>Mimusops elengi</i>	Bakul	Sapotaceae	Tree	Terrestrial	Vegetative	LC
149.	<i>Sterculia foetida</i>	Janglibadam	Sterculiaceae	Tree	Terrestrial	Flowering, fruiting	NA
150.	<i>Pterospermum acerifolium</i>	Muchkund	Sterculiaceae	Tree	Terrestrial	Flowering	LC
151.	<i>Vitex negundo</i>	Nirgudi	Verbenaceae	Tree	Terrestrial	Vegetative	LC
152.	<i>Ravenala madagascariensis</i>	Traveller's palm	Strelitziaceae	Tree	Terrestrial	Vegetative	LC

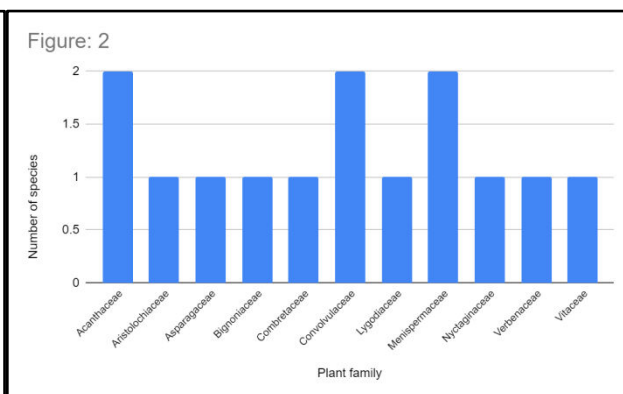
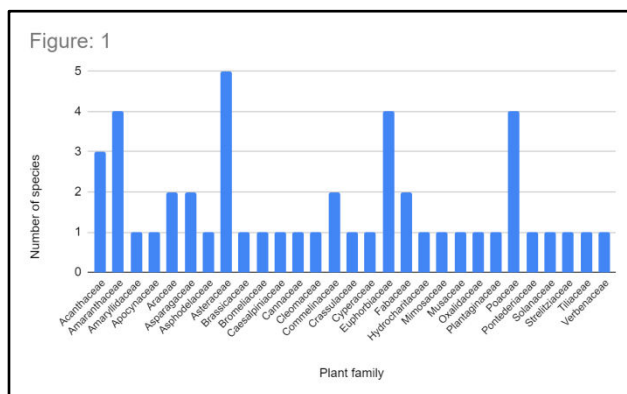


Figure 1: Herbs showing number of species from different plant families in Vidya Prasarak Mandal's Jnanadweep campus in the month of January - April, 2019 – 2021

Figure 2: Climber showing number of species from different plant families in Vidya Prasarak Mandal's Jnanadweep campus in the month of January - April, 2019 - 2021

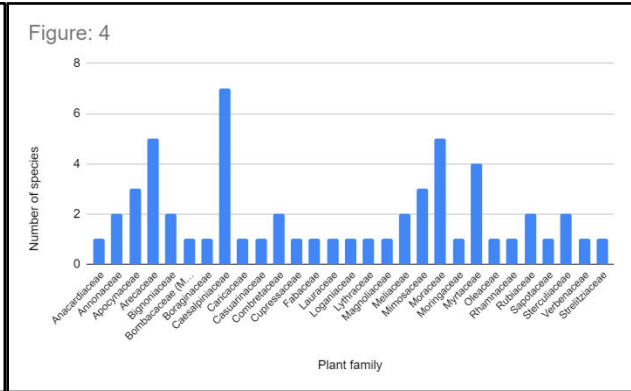
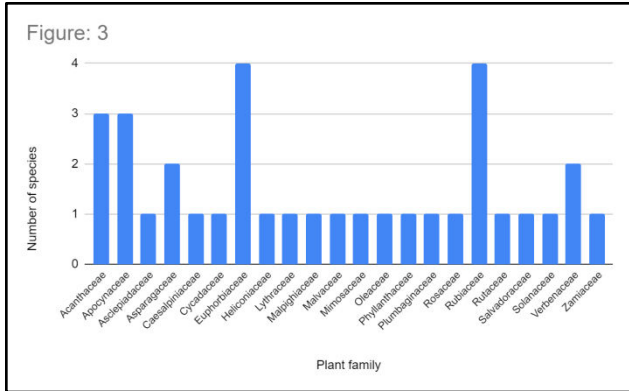


Figure 3: Shrubs showing number of species from different plant families in Vidya Prasarak Mandal’s Jnanadweep campus in the month of January - April, 2019 - 2021

Figure 4: Trees showing number of species from different plant families in Vidya Prasarak Mandal’s Jnanadweep campus in the month of January - April, 2019 - 2021

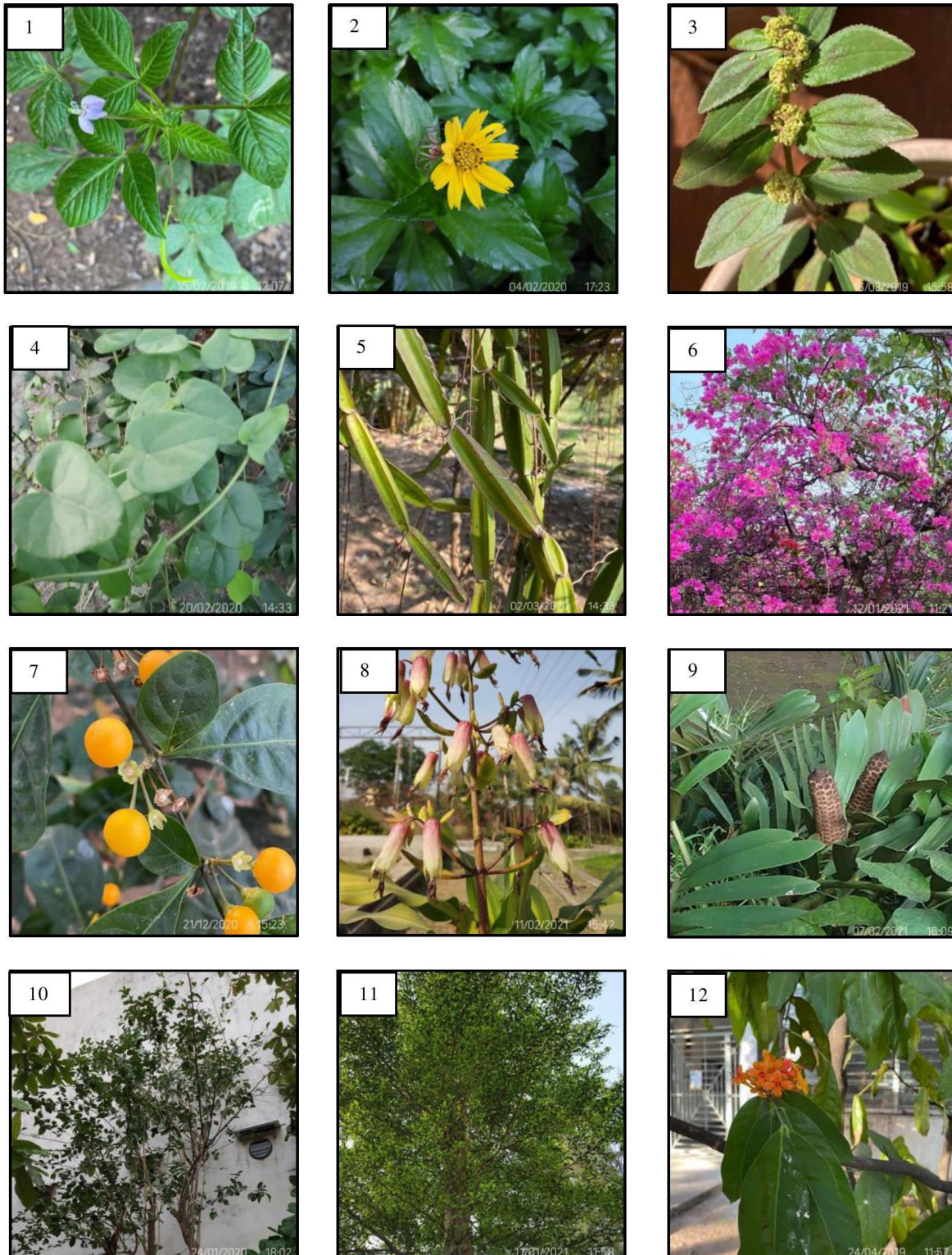


Plate 2: Some of the herbs, climbers, shrubs and trees located in VPM Thane campus during the observation period from January - April, 2019, 2020 and 2021. 1 - *Sieruela rufosperma*, 2 - *Sphagneticola trilobata*, 3 - *Euphorbia hirta*, 4 - *Cocculus hirsutus*, 5 - *Cissus quadrangularis*, 6 - *Bougainvillea glabra*, 7 - *Solanum diphyllum*, 8 - *Kalanchoe pinnata*, 9 - *Zamia* spp, 10 - *Ehretia laevis*, 11 - *Terminalia neotaliala*, 12 - *Saraca asoca*.

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