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Status of Plant Diversity in 2022 and Its Progression in Campus of Maltidhari College, Naubatpur, Patna Since 2007

Sheo Kumar[1] and Rishikesh Kumar[2*]

[1]Former Scientist'F' Botanic Garden of Indian Republic, Noida, UP, India

[2]Assistant Professor and HOD, Department of Zoology, Maltidhari College (A constituent College of Patliputra University, Patna), Naubatpur, Patna, Bihar, India

[*]Corresponding Author

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ABSTRACT

Maltidhari College, Naubatpur, Patna is a rural area constituent college of Patliputra University, Patna in the state of Bihar. The college has maintained high standards in relation to ecological perspective. Google Earth data of last 15 years prior to 2022 shows that changes in campus has not disturbed the biodiversity and number of trees. Efforts to improve plant diversity include establishment of different gardens with various purposes like Sundar Lal Bahuguna Fal Udyan for fruits, Rishi Bagh Bhatt Ayurvedic Udyan for medicinal plants, Malti Pusp Vatika for flowers, Botanical Garden for woods and Gandhi Naitik Sthal for aesthetic plants. Besides these many other plants have been planted along the sides of pathway and backyard of most of the buildings. These areas have large trees which maximises utilisation of land area of the campus for greenery purpose. Our scientific survey of flora found a total of 322 trees of 51 different species that includes trees of mainly Gymnosperms and Angiosperms. *Tectona grandis* followed by *Wodyetia bifurcate* are most frequent species of tree. To our surprise the campus also has few species of plants which are in various categories of risk of extinction such as critically endangered, Endangered, Threatened and Vulnerable as per IUCN red list data. It also has species of trees whose global trend of population is decreasing as per IUCN Red List Data. In campus these plants have Shannon's diversity index of 2.91 and Simpson's diversity index of 0.88. This college presents an ideal example of development with ecological preservation. Number of trees have increased from 11 in 2012 to 322 in 2022. Collective tree plantation programme of 2016 caused the increase the number of trees from 27 in 2017 to 255 in 2018.

INTRODUCTION

Existence of all forms of life in a particular area is called biodiversity. It is supported by different kinds of ecosystems where many types of food chains and food webs are formed. It helps in improving the richness and productivity of the ecosystem (Thébault and Loreau 2003). A robust Plant diversity is an important factor in maintenance of a healthy environment. But threats like habitat loss, overexploitation, invasive species, pollution and anthropogenic climate change pose a problem for their maintenance (Corlett 2016). Recent findings reveal that long term existence of plant diversity improve performance of soil biota in retaining a high number of belowground communities (Eisenhauer et al. 2011) . Their importance is reflected in ecosystem functioning and services in the changing world with variable environmental conditions (Isbell et al. 2011). Even for agriculture it has a role in the increase of stability of arthropod community across all trophic levels for both herbivore and predatory types primarily due to plant productivity and plant community stability along with availability of consistent food and habitat resources to arthropod food webs(Haddad et al. 2011). Different components of food chains and food webs interact with non-living matter such as sunlight, CO_2(Hilligsøe et al. 2011), water (Zhao et al. 2019)(KISHI et al. 2005) and soil (Sprunger et al. 2019). An intricate balance is important between the living and non-living components of the ecosystem as disturbance in one of the components affects the other(Kumar and Karthika 2020). A robust biodiversity is necessary for the existence of an ecosystem since it minimises threats to the healthy ecosystem.(Schwartz et al. 2000). Conserving the

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biodiversity at each level saves our planet which helps in improved health for human beings(Schwartz et al. 2000; Kumar and Karthika 2020).

Substantial plant diversity is maintained by university campuses in China that includes 1565 woody and 1614 herbaceous species for which anthropogenic variables are main factor behind their distribution pattern (Liu et al. 2017). At national level in China campus area positively affects native species richness whereas non-native species richness is associated with mean annual temperature, precipitation, seasonality, campus age and area (Wang et al. 2021).Considering these facts educating students on biodiversity has become an important aspect of any educational institution. Maltidhari college in Naubatpur has been categorised as rural area college but due to good connectivity with Patna (Capital city of state of Bihar in India) effects of urbanisation can be easily felt here due to ease of connectivity caused by construction of 8 lane highway (SH-78) crossing east to west, NH-98 crossing North to South, a new road parallel to the canal and an earlier constructed canal road. SH-78 and NH-98 have heavy load of vehicles including bikes, cars, buses, Tractors, and trucks. These will negatively affect natural vegetation, net primary productivity and natural biomass (Chen et al. 2003) together with creating an increase in noise (Yusoff and Ishak) as well as deterioration of air quality (Giunta 2020). Maltidhari college has robust ecosystem where many different kinds of plants and animals are present. It was established in 1956 and lots of changes has occurred since then. Here we have tried to study progression of tree plantation in the campus over 15 years of time. Our previous work has already done a detailed study on the developmental changes that include civil works in the college over the same period of time (Kumar and Kumar 2023). Analysing collectively the data of developmental changes and plant community progression indicates that college has maintained its plant diversity in spite of large developmental changes including civil works that happened in 15 years of time. We have presented here the diversity of trees only, but our other study reveals that college has a rich diversity of animals also (Unpublished data). These efforts will help us in maintaining the biodiversity and their conservation. Educational institute playing a role in conservation of threatened species has been noted at Botanic Garden of Yogi Vemana University, Kadapa, Andhra Pradesh, India which is conserving 150 endemic and threatened species (Madhusudhana Reddy and Nagendra 2023) .Similarly Botanic Garden of Warsaw University is actively involved in protecting threatened and protected Polish plant species by creating awareness in wide public along with students, teachers and school children (Kirpluk and Podstolski 2015). In Bangladesh among the tree species campus flora of chittagong university, includes 13% as Vulnerable, 4% as Endangered and 3% as Critically Endangered (Akter et al. 2022) . Common diversity indices of species richness like Shannon's diversity (H) and Simpson's diversity (D) have been used in many diversity related studies (Eshaghi Rad et al. 2009; Morris et al. 2014).

MATERIALS AND METHODS

Online and offline Tools-Images of Google Map and Google earth since 2007 was used to monitor the plant progression. These images were captured as screenshots. Its data was used to find the coordinates and temporal vegetation changes in the college. Global status for red listing and population trend of plants was obtained from IUCN Red List Database. Excel Sheet was used to calculate the Shannon's diversity index and Simpson's Diversity index, Species frequency and population trend frequency.

Plant Identification - It was done by superficial and morphological observation of parts of the plants. Survey was done for plants ranging in height from 3 to 30 feet and included Numbering, positioning, classification and identification of plants. Died trees were excluded from survey. High-definition camera was used to take the photographs of plants present in the college in full sunlight of Noon.

Survey site- Campus of MD college, Naubatpur, Patna was selected as survey site due to its rich biodiversity in spite of large-scale development in civil work which was carried out in study period. The survey site has been divided to Sides of roads, Parking area, Examination department, Arts block, Golden Jubilee Hall, Physics Department, Science block, sides of playground, Area behind Girl's hostel and five established gardens.

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RESULTS

Trees planted span entire area except the playground and buildings- The campus of the college has used maximum possible land for vegetation. Except the area of two playgrounds and constructed buildings, all areas have been covered by trees with variable densities. The college campus has many gardens which is helping in maintaining the greenery of the college.

Rishi Bagh Bhatt Ayurvedic Udyan- This garden has many plants with medicinal values. Total Number of trees present there at the time of survey was 19.

Malti Pusp Vatika- This garden has plants with ornamental values. The garden has been named after Maltidhari Singh who donated land for the college. Total Number of trees present there at the time of survey was 9.

Gandhi Naitik Sthal- This is latest established garden in the college campus. The garden is planted with aesthetic plants. Total Number of trees present there at the time of survey was 36.

Sundar Lal Bahuguna Fal Udyan- This garden has fruit bearing plants which have economic values. Total Number of trees present there at the time of survey was 41.

Botanical Garden- Mainly trees for timber production has been planted here. Total Number of trees present there at the time of survey was 11.

Thus total number of trees present in all the gardens together is 116. The area behind the girl's hostel, sides of playgrounds, backyards of buildings and sides of roads have been used for providing space for trees for remaining 206 trees (Figure-5a). Leaving the fruit garden the total area of remaining four garden is 2083.88 m^2 (Kumar and Kumar 2023). This helps in creating an aesthetic view to the college campus and adds ambiance propitious to the sustenance and development of academics in the college campus.

Diversity of flora- The college has maintained since long time wide variety of plants. This helps different types of animals also survive here due to availability of food and shelter. Analysis of collected data, shows that there exists approximately 60 species of plants that includes trees, herbs and shrubs. Among these 24 species are endemic while 34 species are under threatened categories as declared by IUCN red list. Other than these, the number of species in the college premise with medicinal, economic and ornamental values are 44,42 and 25 respectively. In Rishi Bagh Bhatt Ayurvedic Udyan, So far 40 species including herbaceous species are conserved while in Sundar Lal Bahuguna Fal Udyan 40 species are found namely Mango, Guava, Pomegranate, Fig, Gooseberry, Wood apple, Cherry, Sapodilla, Coconut, Star fruit, Lemon, Lychee, Neem and Custard apple. In flower garden, season wise plantation is also being carried out which not only create aesthetic view for college but also attracts bees, insects, butterflies, dragon flies and birds that helps in pollination among flowers of the conserved plants.

Among the planted plants, most plants are bearing broad leaves which not only overcome the vehicular pollution loads i.e. consume hazardous gases and prevent suspended particulate matter but also provide adequate shade and hiding place for breeding of fauna.

Diversity of trees in the campus is moderate- Our survey done in the campus identified a total of 322 trees among which *Tectona grandis* is present in highest number with 96 followed by *Wodyetia bifurcate* with 29 and *Cassia fistula* with 26 trees. A total of 51 species of trees were identified. The details of species of trees with their number can be found in Table-1. A calculation of Shannon's Diversity index revealed a value of 2.91 which can be considered as moderate level of tree diversity in the campus. There is a total of 8 number of species of trees whose number crosses 10. Calculating Simpson's Diversity index gives the value of 0.88 which indicates very high tree species diversity and also means that campus is dominated by many species rather than getting monopolised by one or few species. 17 species have only one, 13 species are present with two trees, 5 species are present in 3 numbers each and 5 another species is present with 4 trees. Most of the species of trees with high numbers are either of economic or of aesthetic importance in the college.

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Table 1- Table shows the Species of trees present in the college campus with respective numbers.

Sl. No.	Scientific Name	Frequency
1	*Tectona grandis*	96
2	*Wodyetia bifurcate*	29
3	*Cassia fistula*	26
4	*Ceiba pentandra*	22
5	*Polyalthia longifolia*	18
6	*Ficus religiosa*	13
7	*Azadirachta indica*	11
8	*Mangifera indica L*	11
9	*Cocos nucifera L*	7
10	*Bauhinia variegata*	6
11	*Psidium guajava L.*	5
12	*Araucaria heterophylla*	4
13	*Delonix regia*	4
14	*Hibiscus rosa-sinensis L.*	4
15	*Phyllanthus emblica L.*	4
16	*Thuja occidentalis L.*	4
17	*Annona squamosa L*	3
18	*Delbergia sissoo*	3
19	*Ficus carica L*	3
20	*Lagerstroemia speciosa (L.)*	3
21	*Neolamarckia cadamba*	3
22	*Aegle marmelos (L.) Corrêa*	2
23	*Cinnamomum camphora (L.)*	2
24	*Cinnamomum tamala*	2
25	*Cinnamonum verum*	2
26	*Citrus limon (L.)*	2

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27	*Ficus racemosa L.*	2
28	*Juniperus chinensis L*	2
29	*Manilkara zapota (L.)*	2
30	*Murraya paniculata*	2
31	*Nyctanthesarbor-tristis L.*	2
32	*Pterospermum acerifolium (L.)*	2
33	*Punica granatum L.*	2
34	*Roystonea regia*	2
35	*Artocarpus lacucha Buch. -Ham.*	1
36	*Averrhoa carambola L*	1
37	*Bombax ceiba L*	1
38	*Borassus flabellifer L*	1
39	*Bougainvillea glabra Choisy*	1
40	*Cascabela thevetia (L.)*	1
41	*Commiphora madagascariensis Jacq.,*	1
42	*Ficus benghalensis L*	1
43	*Litchi chinensis Sonn*	1
44	*Malpighia glabra L.*	1
45	*Mimusops elengi L*	1
46	*Moringa oleifera Lam.*	1
47	*Nerium oleander L.*	1
48	*Prosopis cineraria (L.)*	1
49	*Psidium guazava*	1
50	*Tecoma stans (L.)*	1
51	*Terminalia catappa L*	1
	Total	**322**

College Campus as a nurturing place for Tree species at risk- Species of trees which are present in the college campus are from diverse categories which are mentioned in IUCN red list data. *Roystonea regia* with two trees in the college campus is categorised as Critically Endangered, *Tectona grandis* with highest number in campus is categorised as Endangered species. *Wodyetia bifurcate* is considered as lower risk while *Aegle*

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marmelos and *Commiphora madagascariensis* has been categorised as near threatened as per IUCN Red List Data. Adding to the category of Vulnerable are *Araucaria heterophylla*, *Cinnamomum verum* and *Litchi chinensis*. Majority of the species fall under Least Concerned category and a few species do not find any mention in the IUCN red list data (Table-2).

Table 2 shows number of species falling into various categories of IUCN Red list data.

IUCN Status	**Species No.**
Least Concern	32
No Mention	9
Vulnerable	3
Data Deficient	2
Near Threatened	2
Critically Endangered	1
Endangered	1
Lower Risk	1

The college campus provides a good nurturing sites for the species at risk in global perspective as it can be viewed in Table-2. This demonstrates the effort of preserving tree diversity specially for species at risk displaying a biological significance at local level. The population trend of some species like *Tectona grandis*, *Phyllanthus emblica*, *Aegle marmelos*, *Cinnamomum tamala* and *Manilkara zapota* is decreasing at global level as per IUCN red list data (Table-3). The presence of *Tectona grandis* in the campus in highest number is an indication of its efforts to preserve the rare tree species.

Table-3 shows the number of species under various categories of population trend.

Population Trend	**Species No.**
Stable	16
Unknown	14
No Mention	9
Decreasing	5
Unspecified	4
Increasing	3

Status of Flora– Mainly plants of Gymnosperms and Angiosperms are present here. All plants seem to be lively and healthy even in summer season which can be viewed in Figure1, 2, 3 and 4. First 4 photographs (1 to 4) of figure 1 are gymnosperms while rest of the photographs from figure 5 to 52 are Angiosperms. Species of trees present in the campus can be found in legends of figures.

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Figure1- **1)** *Araucaria heterophylla (Salisb.)* Franco **2)** *Juniperus chinensis L.* **3)** *Juniperus sp.* **4)** *Thuja occidentalis L.* **5)** *Aegle marmelos (L.) Correa* **6)** *Annona squamosa L.* **7)** *Artocarpus lacucha Buch. -Ham.* **8)** *Averrhoa carambola L.* **9)** *Azadirachta indica A.Juss.* **10)** *Bauhinia variegate L.* **11)** *Bombax ceiba L.* **12)** *Borassus flabellifer L.* **13)** *Baugainvillae glabra Choisy* **14)** *Cascabela thevetia (L.) Lippold* **15)** *Cassia fistula L.* **16)** *Ceiba pentandra (L.) Gaertn.*

There are two playgrounds in the college campus. Few plants are populated on the border areas of the larger playground. Smaller playground does not harbour any tree there.

Figure 2- 17) *Cinnamomum camphora (L.) J. Presi* **18)** **19)** *Cinnamomum verum J. Presi* ***20)*** *Citrus limon (L.) Osbeck* **21)** *Cocos nucifera L.* **22)** *Commiphora madagascariensis Jacq.* **23)** *Dalbergia sissoo DC.* **24)** *Delonix regia (Hook.) Raf.* **25)** *Ficus benghalensis L.* **26)** *Ficus carica L.* **27)** *Ficus racemosa L.* **28)** *Ficus religiosa L.* **29)** *Hibiscus rosasinensis L.* **30)** *Lagerstroemia speciosa (L.) Pers.* **31)** *Litchi chinensis Sonn* **32)** *Malpighia glabra*

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Figure 3- 33) *Mangifera indica L.* **34)** *Manikara zapota (L.) P. Royen* **35)** *Mirmusops elengi L.* **36)** *Moringa oleifera Lam.* **37)** *Murraya Paniculata (L.) Jack* **38)** *Nyctanthesarbor-tristis L.* **39)** *Nerium oleander L.* **40)** *Neolamarckia cadamba (Roxb.) Bosser* **41)** *Phyllanthus emblica L.* **42)** *Polyalthia longifolia (Sonn.) Thwaites* **43)** *Prosopis cineraria (L.) Druce* **44)** *Psidium guajava L.* **45)** *Pterospermum acerifolium (L.) Willd.* **46)** *Punica granatum L.* **47)** *Roystonea regia (Kunth) O.F. Cook* **48)** *Tecoma stans (L.) Juss. ex Kunth*

Figure 4- **49)** *Tectona grandis L.f.* **50)** *Terminalia catappa L.* **51)** *Wodyetia bifurcate A.K. Irvine* **52)** *Yucca elephantipes 'Variegata'*

Year wise Plant community progression in college campus- We have data available from Google map through which plant community progression specially trees in different parts of college campus can be seen after 2007. Since there is no image of 2008 and 2009 so data analysis for this period has not been done.

2007 to 2011-

In **2007** Half area of the field of college at that time were used for agricultural works while rest of the land area were used as playground. At that time 15 trees of 11 species were present which were one tree each of Sacred fig (Pipal), Silk Cotton (Semal), Cluster fig (Gular), Royal poinciana (Gulmohar), Bur flower-tree (Kadam), Monkey jack Barhar), Palmyra palm (Tar) and Teak (Sagaun) were there. Two trees of Bottle palm, Maple-leaved bayur tree (Kanak Champa) while three plants of giant crepe-myrtle (Jarul) were present at that time (Figure-5b). In **2010** Apart from above mentioned numbers 30-35 new plants of 3-4 species of possibly Shami, Indian rosewood (Sisam) and teak (Sagaun) had been planted. Thus, total number of plant species had increased from 11 to 14-15 and total trees had increased from 15 to 45-50 (Figure-5c). In **2011** 27 trees seem to be alive out of 35 trees which were planted (Figure-5d).

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2012 to 2017-

In **2012** Landlords can be seen doing agricultural works in their fields. It seems some new trees have been planted in botanical garden. Simultaneously 35 plants which were planted in 2010 possibly 27 trees can be seen as surviving (Figure-6a). In **2013** and **2014** status of plants is almost same as it was in 2012. In 2015 to increase the number of trees in the campus around 170 new ditches were dug. Otherwise, present status of plants is same as it was in 2012 (Figure-6c). In **2016** it seems170 new ditches were dug and planting was done in them during "Large scale tree plantation programme" of which most look to have survived. Thus, in the campus present number of trees increased from 50 to 215 (Figure-6b). In **2017** Inauguration of Rishi Baghbhatt Ayurvedic garden was done on 19.08.2017. 40 medicinal plants were planted in the garden. After the establishment of the Malti Pusp Vatika (flower garden) it was surrounded on all four sides by making ward. 170 trees planted under collective tree plantation programme most of them were live and growing (Figure-6D).

Figure-5- Google Images of year 2022, 2007, 2010 and 2011. Figure of year 2022 shows the location of all the gardens in the college. Yellow line indicates outline and white line gardens of the college.

Figure 6-Google Earth Image of 2012, 2015, 2016,2017.

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2018 to 2022

In **2018** trees planted in 2010 have taken the shape adolescence. Out of 170 that were planted in 2016 under collective tree plantation programme most of the trees looking alive. Thus, after adding number of plants of Rishi Bagh Bhatt Ayurvedic Garden to established number of plants the number of trees present become 255.

Figure 7-Google Earth Image of 2018, 2020, 2021,2022.

Since most of the plants of flower garden are seasonal flower bearing so their number has not been included here (Figure-7a). In **2019** there is no change compared to 2018 so figure not included here. In **2020** Sundar Lal Bahuguna fruit garden which was inaugurated on 31.10.2018 was planted with 41 plants of 14 species of fruit bearing plants. In this way due to increase in number of fruit bearing plants of Sundar Lal Bahuguna Fruit Garden total number of plants Including bushes and trees is 296 (Figure-7B).

In **2021** 35 plants of 4 species that included herbs, plants/hedge had been planted in Bapu Naitik Sthal (Figure-7C). In **2022** 322 Plants (including bushes, trees) planted after 2007 to 2010, 2015-16, 2017, 2018 and 2020 have taken such shape that they can provide shade along with places to hide, nesting and reproduction to other animals (Figure-7D). Thus, total number of bushes and plants have become 331 in campus after adding the number of plants of Bapu Naitik Sthal. In the survey 322 trees of more than 3 feet were recorded.

DISCUSSION

Clean and green campus is primary requirement of any higher educational institution. It is not only important to provide pollution free environment for the students and teachers for their good health but also to maintain a conducive environment for education especially wrt reduced level of CO_2(Li et al. 2021). Tree plantation has become a common part to mark any special occasion. Eco Club of the college has played a significant role in the events. There are different eco clubs in many educational institutions which also do some other events related to ecological aspect (Roberts 2009).The college campus has five gardens with trees of specific purposes like medicine, fruit bearing, flower, economic and aesthetic. One of the way gardens are being used for academic purposes is for teaching nutrition in gardens by linking garden and school meal programme helping them to learn taste-testing of fresh edible produce in garden or classroom setting(Graham et al. 2005). School gardening initiatives has shown positive outcomes in the areas of science achievement and food behaviour and has broad scope of positive outcomes in social and environmental behaviour(Blair 2009). Academic outcomes in schools have got a positive impact by use of garden-based learning with highest positive effect for science

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followed by maths and arts in addition to improvement of social development (Williams and Dixon 2013) . The campus has 322 number of trees with 51 species being *Tectona grandis* most common species followed by *Wodyetia bifurcate*. The tree species in the campus also includes species of trees listed in IUCN Red List data such as *Roystonea regia* categorised as critically endangered, *Tectona grandis* categorised as endangered and *Wodyetia bifurcate* as near threatened. A case study of University of Benin showed a total number of 268 trees comprising 24 species from 14 families of which *Tectona grandis* had highest relative density and abundance. Campus tree flora provided environmental services such as nutrient sink, campus aesthetics, shield from UV rays, student education, environmental monitoring, reduce air pollution, erosion control and bio resource conservation (Ogwu et al. 2016) . A study of diversity of flora of Universitas Halu Oleo Botanical Garden from august to October 2016 revealed 86 species of flora which included 72 genus and 45 families of which Myrtaceae was dominant family(Manan et al. 2016). Diversity of understorey plants in Pondok Buluh Education and Training Forest Simalungun, North Smatra comprised of 30 species consisting of 13 families, namely Araceae with 12 species (40.00%), Arecaceae comprised 4 species (13.33%), Zingiberaceae 3 species (10.00%), Poaceae 2 species (6.67%), and Asteraceae 1 species (3.33%) (Manurung and Hasibuan 2022) .

The college has high level of ecological importance in the surrounding locality considering its varied diversity of trees despite increased vehicular pollution and rural to semi-urban transition. The number of trees has significantly increased from 10 to 322 in last 15 years. So our vision includes making the college as best local biodiversity hotspot in coming years. Civil works like Building construction negatively affect vegetation and so diversity of animals and plants. Here a balance has been maintained between civil works and preservation of diversity. Presence of healthy diversity in any place helps in improving the quality of environment. Even the presence of high number of trees is helpful in purifying the air. Dust particles generated from manmade activities can be reduced by presence of trees. The pollution created by vehicles are bought to least negative effect on human beings by the presence of trees and vegetation. Animals of diverse types feel more comfortable under the tree. In this study we have done survey of all trees in day time.

In the coming years special efforts are planned to conserve this diversity of plants in the college campus. These include detailed scientific study of biodiversity, labelling the trees with an assigned number, to build a green house, train students to ensure their increased participation and doing more plantations like cactus and manslodbhid for improving greenery. To increase the community of animals in campus they plan to dig a pond to maintain aquatic fauna. In 2022 it is just for site clarification that photograph used here is on February 2022 while survey was done in May 2022. This doesn't affect our results as all the plantation work of Bapu naitik sthal was completed before February 2022.

CONCLUSION

Plants have evolved as an integral component of any place. Their number and diversity are good for environment as well as aesthetics of the place. The campus of this college has utilised the diversity of plants for different purposes that includes Decoration, Ecological stability, Economic benefit from fruit and timber plants, Medicine and shade providers. It has five gardens with different purposes with diverse collection of trees. To increase tree number and diversity special plantation drive has been carried out and plantation is done to mark special occasions. Here a total of 322 trees of 51 species that includes both Gymnosperms and Angiosperms are present. The tree with highest number is *Tectona grandis* with 96 followed by *Wodyetia bifurcate* with 29. Here all trees are healthy with Shannon's Diversity index is 2.91 and Simpson's Diversity index is 0.88. The campus is playing an important role as a nurturing site for species at risk as per IUCN red list data such as *Roystonea regia* (critically endangered), *Tectona grandis* (Endangered), *Aegle marmelos* (near threatened) and many more. *Cinnamomum tamala*, *Manilkara zapota* and *Phyllanthus emblica* and some other species with decreasing population trend at global level are present here. In 15 years from 2007 to 2022 the number of trees has increased from 15 to 322 and species number increased from 11 to 51. Google earth imagery shows that Special plantation drive was carried out in 2016 during which around 170 new ditches were dug. Bapu Naitik sthal is latest established garden in 2022 for Aesthetics purpose. The college has maintained a moderate level of Tree biodiversity despite its transitioning towards urbanisation and lots of civil works to increase educational infrastructure.

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