FROM THREAT TO ACTION

CONFRONTING INVASIVE SPECIES AND PRESERVING BIODIVERSITY

MCOP5 TEAM
SPRINGDALES SCHOOL
DHAULA KUAN

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INTRODUCTION

We were five find-outers, out to investigate the presence of invasive species in our city, Delhi, and find ways to reduce their prevalence. But what it became was a deep dive into the biodiversity of the region.

We chose this target because it presented a thrilling opportunity to do fieldwork inside the Ridge - a rocky, semi-wild landform in Delhi that is part of the ancient Aravalli hills. The highly segmented Ridge is often called the city's green lungs. What many, however, don't realize is the massive threat it has been battling under their very nose: invasive flora.

Like most city kids, we were comfortable hanging around indoors, unused to hiking and suffered from an acute case of 'tree-blindness'. But as we began our explorations for the project, we slowly but surely turned over a new leaf.

On weekends or after school - accompanied by our science teacher and our mothers who proved to be just as keen to learn (and unlearn!) as us - off we went to muddy our boots. We saw up close how trees have their own unique persona just like us, with distinctive flowers, seedpods, spines and bark. We realized how beautifully native plants enrich the soil and keep the local fauna thriving.

Many misconceptions were peeled away. Perhaps one of our biggest learnings was that not all green is good green. We saw how alien flora, brought in by the British for beautification, had stolen the thunder of our native species, impacting biodiversity. It was eye-opening, to say the least.

We couldn't sit back, could we? What follows is our story, the story of what we did, the people who joined our cause, and how we learnt to befriend wilderness in its entirety - beetles, wasps, termites et al!

Source: All photos are clicked and owned by our MCOP5 team

ACTION PLAN

SCHOOL NAME: SPRINGDALES SCHOOL, DHAULA KUAN, NEW DELHI

MCOP5 TARGET 2: EVALUATE THE PRESENCE OF INVASIVE SPECIES IN YOUR CITY AND WORK TO REDUCE THEIR PREVALENCE THROUGH THE ADOPTION OF DIVERSE MITIGATION MEASURES

ACTIONS	HOW?	WHO?	WHEN?	HOW WILL PROGRESS BE MEASURED?
1. SURVEY / INVESTIGATION	1. Read up on native flora and fauna of the Ridge forests of the Aravalli region 2. Interact with conservationists and experts to understand the problem 3. Do a field trip to Sanjay Van with teachers, parents, naturalist to gauge the extent of the problem 4. Identify at least 3 spots which need intervention	Our MCOP5 Team, Teachers, Parents, Conservationists and Experts	August to September 2024	1. Understanding of and identification of invasive alien species, native species and urban biodiversity in the student-teacher-parent community
2. AWARENESS	1. Hold quizzes in school about urban flora and fauna. Put up posters in classes 2. Perform skits	Our MCOP5 Team, Students, Teachers, Parents	Throughout the timeline of the action plan	1. Track number of field trips, campaign conducted 2. Guage level of interest through social media pages

	3. Organize field trips with experts and naturalists 4. Use various media to spread information on invasive alien species, native flora-fauna of Aravalli region			3. Write short stories to generate awareness among young minds
3. DRIVES TO MITIGATE / ERADICATE INVASIVE SPECIES	1. Work with gardeners to uproot invasive grasses, saplings of woody trees and bushy plants - in school 2. Plant native species in school and home gardens. 3. Take part in invasive plant removal and uprooting drives in biodiversity parks/city forests like Tilpath Valley Biodiversity Park, Sanjay Van, Northern Ridge with the help of NGOs, naturalists and local authorities	Our MCOP5 Team, Students, Teachers, School Gardeners, Parents, NGOs, Naturalists, Local Authorities, Enthusiasts	At least 3 drives in 3 biodiversity parks/city forests like Sanjay Van, Northern Ridge, Aravalli Biodiversity Park in Vasant Kunj by November 2024	1. Photographs of the targeted sites before and after the drives 2. Documenting impact of reduced invasive flora on urban biodiversity, i.e. on native flora and fauna (insects/birds/animals) 3. Impact on social media

4. PROMOTING NATIVE FLORA, SUPPORTING URBAN BIODIVERSITY	1. Sourcing free seeds and saplings of native species from biodiversity parks and NGOs 2. Distributing native plant seeds and saplings in school, home gardens 3. Showing linkages between native flora and urban biodiversity on social media 4. Campaigns in school to create awareness 5. Take part in rewilding activities in Northern Ridge	Our MCOP5 Team, Students, Teachers, Biodiversity Park authorities, NGOs, Parents, Enthusiasts	Throughout the timeline of the action plan	1. Documenting the increased presence of pollinators like butterflies, caterpillars, bees, and birds due to greater presence of native flora 2. Documenting improved presence of earthworms, frogs, beetles, due to positive impact of native flora on soil and groundwater 3. Document the growth of seedlings and plants distributed

Someone's sitting in the shade today because someone planted a tree a long time ago

FIELD VISITS REPORT

For our field visits, we chose the Northern and South-Central Ridge. Some of us also individually ventured into the Aravalli Biodiversity Parks in Gurgaon and Vasant Kunj.

In these woods, we discovered the joys of walking through bush and bramble, surrounded by bird calls, buzzing insects and wilderness. With repeated visits, we learnt to identify invasive alien species like the Vilaiati Keekar, Lantana camara, Subabool, Water Hyacinth and Parthenium grass. We saw how these have deftly adapted to Delhi's semi-arid environment, enabling them to steal the territory of native Aravalli flora like the Acacias. Aided by several experts, we gained insights into the region's biodiversity.

Finally, we took action: preparing seedbeds, planting native tree saplings, learning to reduce the growth of invasive flora, and spreading awareness about it to anyone who cared to listen.

WHAT IS INVASIVE FLORA?

India has a National Biodiversity Authority under the environment ministry which can declare a plant as an invasive alien species. This does not include all exotics brought in from foreign shores for greenery or beautification. But alien species that threaten the region's biodiversity definitely qualify as invasive.

Source: All photos are clicked and owned by our MCOP5 team

SANJAY VAN

OUR NATURALISTS

- **Kannan Sandeep**, a WWF and BNHS volunteer
- **Pulkit Sharma**, formerly nature education officer at the Biodiversity Parks Program, Delhi University

KEY LEARNING: UNDERSTANDING BIODIVERSITY

Invasive Alien Species

Our visit to the densely wooded 630-acre reserve forest in the South-Central Ridge revealed the overwhelming presence of Vilaiti Keekar, or Prosopis juliflora, which some experts say now makes up 90 percent of the landscape here. It is believed to have been brought from Central America by the British for beautification.

Prosopis juliflora spreads its canopy so wide that it blocks the sunlight for other plants. It also produces chemicals that do not allow other seeds to germinate in the soil around it. As a result, the native trees of the Ridge, which were typically stunted and open canopied, have lost their turf to the Vilaiti Keekar.

We also saw Lantana camara shrubs, toxic Parthenium grass, and Subabool trees – all of which are now considered highly invasive in the Aravallis - growing all over Sanjay Van.


Vilaiti Keekar


Parthenium Grass


Lantana Camara


Subabool

Native Flora

It gladdened our hearts to see a native Heens tree towering over a Vilaiti Keekar right at the entrance to the forest. We learnt that Heens seeds germinate on the tree itself, so chemical secretions in the soil by Prosopis juliflora can't kill them.

We found Dhau - a pioneering native tree of the Aravallis - growing in Sanjay Van. Our experts also showed us natives like Bistendu, Ronjh, Babool (Desi Keekar), Khair and Khejri in this forested area.


Dhau


Germinated Heens seeds


Heens on Vilaiti Keekar

Source: All photos are clicked and owned by our MCOP5 team

Symbiotic Relationships

The sight of algae thriving on decaying trees underlined how dead trees play a very important role in the forest ecosystem and should not be cut down or removed. There were big Ganoderma fungi growing on some trees.

Interestingly, we cracked open several figs to find wasps inside - as all figs are pollinated by wasps inside the fruit itself.

Insect Life

Particularly fascinating was the insect life: termite hills (which, contrary to popular belief, are telltale signs of a healthy forest); tiny dung beetles rolling dung balls twice their size; weevils etc.

A kaleidoscope of butterflies sitting on a soil patch made for a beautiful scene. It is a phenomenon called ‘mudpuddling’ – which our naturalists said is a mode of sucking minerals from the mud. We saw a wide range of butterflies – from Salmon Arab to Plain Tiger to White Orange Tip to Yellow Orange Tip and more. During one visit, in the monsoon month of August, colorful dragonflies and damselflies were hovering over the small wetlands in Sanjay Van.

Source: All photos are clicked and owned by our MCOP5 team

Bird Life

We heard Grey Francolins, Jungle Babblers, Tailor Birds, Warblers, Red Vented Bulbuls and Brown Headed Barbets – most of which were identified by our experts from their calls and not by sighting.

In the wilderness – learning and loving it!!







Source: All photos are clicked and owned by our MCOP5 team

Northern Ridge (Kamla Nehru Ridge)

OUR NATURALISTS

- **Dr. Faiyaz Ahmad Khudsar**, Senior Scientist, Biodiversity Parks Program, CEMDE, DU
- **Dr. A.K. Singh,** Scientist Incharge**,** Kamla Nehru Ridge Biodiversity Parks Program, CEMDE, DU
- **Harmeek Singh**, Field Biologist, Kamla Nehru Ridge Biodiversity Parks Program, CEMDE, DU

Picking on the best brains in the business

Source: All photos are clicked and owned by our MCOP5 team

KEY LEARNING: REDUCING INVASIVES, RESTORING NATIVES

Invasive Alien Species

The Northern Ridge, like most biodiversity parks marked out in Delhi, is being restored by the Delhi Development Authority (DDA) with the help of scientists of Delhi University's Centre for Environmental Management of Degraded Ecosystems (CEMDE).

Renowned conservationist Dr. Faiyaz explained that restoration was a slow process that could not be achieved overnight. In Delhi, laws prevent the cutting of trees, so even invasive trees cannot be cut.

To deal with big invasives like the Vilaiti Keekar, restoration is done through the **Canopy Opening Technique** by pruning the branches. This helps to let in sufficient sunlight. The ground in its vicinity is then planted with hardy native flora.

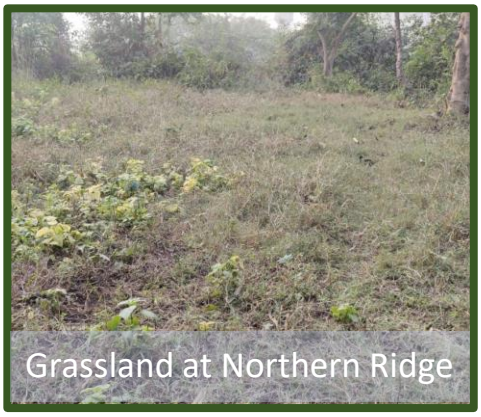
Explaining how weedy species suppress native grasses

Pruned branches of Vilaiti Keekar

Some invasive species like the Lantana camara, according to the India Biodiversity portal, can be curtailed by the **Cut Root-Stock Method** to eliminate the possibility of their seeds germinating again in the soil.

Restoring the Ground Layer

We learnt that a forest has 3 layers: top, middle and ground. Restoration has to start with ground level vegetation, that is, the grasses. Native herbaceous flora is as important to a forest as big trees and shrubs.



Grassland at Northern Ridge

Source: All photos are clicked and owned by our MCOP5 team

Growing Back Native Flora

Scientists strictly advised against mass plantation as that cannot bring back the original mix of grasses, shrubs and trees in a forest. Also, most saplings in mass plantation drives do not survive. Instead, two other methods should be used:

- To look at the ecological history of the place: In order to find out what native flora existed there and can be planted there again.
- To look at a neighboring eco-system: This offers vital clues to the right mix of native flora as the soil and weather conditions are similar in a neighboring eco-system. This is particularly helpful when documented information of the original flora of a place is not available.
- Letting nature take its own course: With the creation of open canopies by pruning - or cutting invasives where it is legally allowed – the soil can automatically regenerate native flora. Though this is a much slower process, it can be very effective.

SIGHTINGS

Exotics and Invasives

At the entrance to the Northern Ridge, we saw a few Bougainvillea trees, which are commonly planted all over Delhi for beautification. We also saw a Balam Kheera tree. Field biologist Harmeek Singh explained that while these were exotic, they were not invasive. However, they did not provide any eco-system services.


Bougainvillea


Balam Kheera

The Lantana camara, however, spreads rapidly. While it is visited by butterflies for nectar, it is not a host plant and thus not used for egg-laying.

Native Flora

At the Northern Ridge, we saw a rich presence of healthy native flora, many of which have grown into young trees. These include Doodhi, Chamrod, Bistendu, Dhak, Dhok (also called Dhau), Kaim, Chirchita, Hingot, Ronjh and Kullu, among others.

Source: All photos are clicked and owned by our MCOP5 team

In figure below, clockwise from top left – Doodhi, Kullu, Amaltas, Kaim, Chirchita, Vajradanti

Ecosystem Services

Unlike the invasives, native plants provide a host of ecosystem services, in turn helping to preserve the local habitat. Here's what we saw and learnt:

- The soil around the Vilaiti Keekar trees was strewn with loose, dry leaves. When we picked them up and pressed these leaves with our palms, they crumbled and fell away like dry powder. In contrast, when we picked up the soil around native trees, it was moist and clumpy, in the form of humus. We learnt that this was evidence of one of the eco-system services provided by native trees as opposed to its absence in the case of Prosopis juliflora.
- Native plants such as the Salvadora are hosts for butterflies, which means they are used for egg-laying.
- The insects hosted by native trees become food for birds.

Source: All photos are clicked and owned by our MCOPE team

- Native trees are used for nesting by birds. Even the cavities of dead trees are used to build nests or hunt for insects.


Hole made by Barbet


Holes made by Woodpeckers

- Native trees are suited to Delhi's semi-arid climate. They help preserve the original conditions of the soil by absorbing less moisture. They also shed their leaves in the dry season in order to preserve moisture.
- Native flora has many uses for humans too. For instance, the Babool is used for dental hygiene; the sap of Doodhi can stop milk from getting spoilt, Kamini is used for fencing, Amaltas is used as a laxative, the list is endless.

Water Harvesting

The Aravallis have natural aquifers and ditches. During monsoon, these ditches collect water. If left untampered, they are a source of water harvesting and provide ground water recharge for the entire forest. Extra efforts are being made to catch the runoffs. Water supply is also directed to these ditches through pipes and other water channels to provide the right soil moisture for restoration.

When in the field, do as field biologists do!

Source: All photos are clicked and owned by our MCOP5 team

Dear Natives –

If you can't outplay them, outwork them

Source: All photos are clicked and owned by our MCOP5 team

ACTION TAKEN

UPROOTING INVASIVES

SANJAY VAN

The sight of so many Vilaiti Keekar and Subabool trees here was daunting and pruning them was beyond our scope. But where there is a will, there is a way.

Finding the Right Spots

Our naturalists guided us to many spots near the big trees where saplings of Vilaiti Keekar and Subabool were coming up by the dozen. Indeed, few other species had taken root there owing to the invasive nature of these trees.

So, we uprooted as many saplings as we could. It wasn't even a drop in the ocean, but we got first-hand experience of what green volunteers and field workers are called upon to do.

Source: All photos are clicked and owned by our MCOP5 team

PREPARATION FOR URBAN FORESTRY

JAGDISH NURSERY (ROSHANARA BAGH) in Association with NGO Hara Jeevan

When we trooped into Jagdish Nursery, we thought we would plant saplings. So, it took us a while to digest what we actually did – sink our hands into the soil and then into a mix of dung and compost!

Yes, it came down to brass tacks as we prepared **seedbeds** for the Goya Khair, a small native tree which flowers beautifully after the early rains. Our venue was no less interesting: a nursery in the sprawling 57-acre Mughal era garden, Roshanara Bagh.

Nurturing Seeds

Around 2,000 Goya Khair seedballs were prepared in the nursery in the first week of September. **Seedballs** protect the seeds inside till they are ready to germinate. The saplings are then supplied by the NGO for **urban forestry** projects in and around Delhi.

Preparing Seedbeds

1. We first spread loose dry soil evenly on a flat surface to prepare the first layer of the seedbed.
2. Next, we spread a layer of compost over the soil.
3. We placed the seedballs on these two layers, row upon row. Some seeds had already germinated, so we placed these shoots upright.
4. We then sprinkled cocopeat fibres over the seedballs as this helps retain moisture and the saplings don't need to be watered frequently.

Seedling to Sapling

We learnt that seedballs and seedbeds set the stage for planting saplings. For instance, the seedlings that germinate at Jagdish Nursery are taken by Hara Jeevan to sites in Noida and Gurgaon for **urban forestry** projects.

Seedlings for Distribution

We received many seedlings and saplings from Hara Jeevan to be distributed amongst family and in the school to promote native species.

Thriving saplings of Adusa at home

Source: All photos are clicked and owned by our MCOP5 team

Many of the saplings from our seedbed will turn into Goya Khair trees. These trees are small, growing up to just 3 metres or so, but the pretty pink and yellow flowers they produce in the dry, rocky Aravalli landscape are a sight to behold. In fact, during our field visits we found some Goya Khair trees flowering in a part of the Aravalli Biodiversity Park, Vasant Kunj, as late as November.

Not afraid to be down and dirty







Source: All photos are clicked and owned by our MCOP5 team

NATIVE FLORA RESTORATION

NORTHERN RIDGE (KAMLA NEHRU RIDGE)

For us, planting a tree has never held more joy than it did at the Northern Ridge. For, we were about to plant saplings of native species like Dhok, Lendia and Hingot, made available by the Northern Ridge CEMDE team. And we were going to do it the right way - just like a forest would.

Planting under Open Canopies

Walking through thorny, wooded pathways, we reached some large pits which had been readied for us. Pruning of Vilaiti Keekar in the vicinity of the pits had already been carried out by CEMDE. As a result, there was plenty of space for the sun to filter through to the saplings we were about to plant.

Ensuring Diversity

We noticed that no two pits were located close by. Also, we were given saplings of diverse native species for different pits. This seemed to be in keeping with the character of any forest which always has a mix of different flora.

Source: All photos are clicked and owned by our MCOP5 team

Documenting Native and Invasive Flora

When in the field, do as field biologists do!

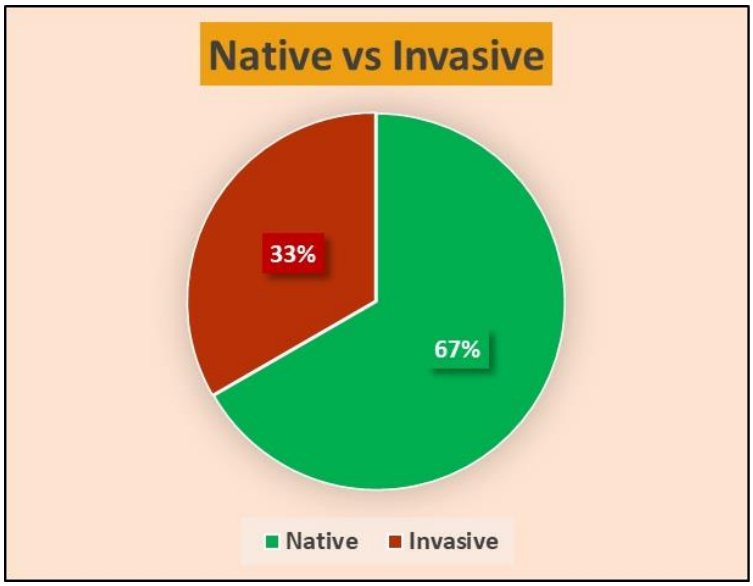
The scientists we interacted with told us about the concept of **quadrats**. It is a technique to record the distribution of flora in a small area. We took data from five 10 m by 10 m quadrats in Kamla Nehru Ridge where the CEMDE team has been working on the reduction of invasive species. Our intention was to find the number of native and invasive trees in these small areas.

Below is the Data Collected:

Our analysis is based only on the native and invasive trees of the Aravallis mentioned in these tables.

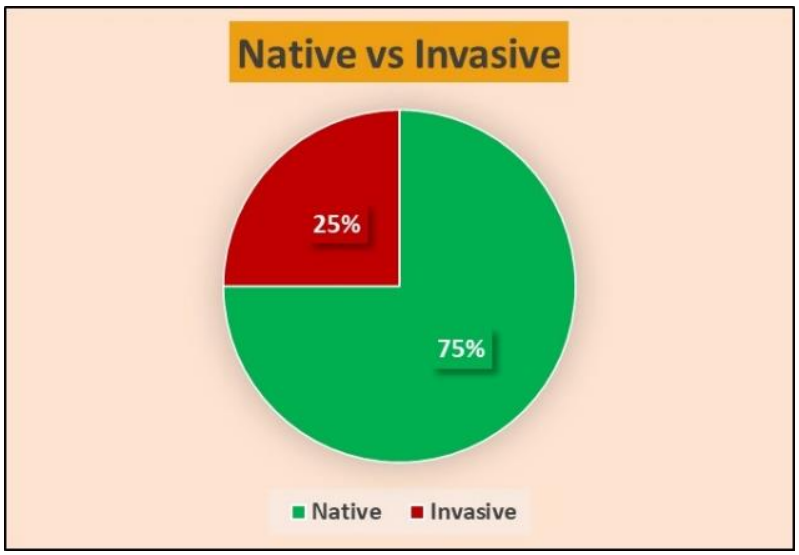
TREES IN QUADRAT 1

S.NO	SCIENTIFIC NAME	LOCAL NAME	GBH (CM)
1	*Pithecellobium dulce*	Jungle Jalebi	76
2	*Pithecellobium dulce*	Jungle Jalebi	64
3	*Kigelia africana*	Balam Kheera	124
4	*Pongamia pinnata*	Papdi	55
5	*Kigelia africana*	Balam Kheera	70
6	*Cassia fistula*	Amaltas	96
7	*Kigelia africana*	Balam Kheera	90
8	*Prosopis juliflora*	Vilaiti Keekar	77



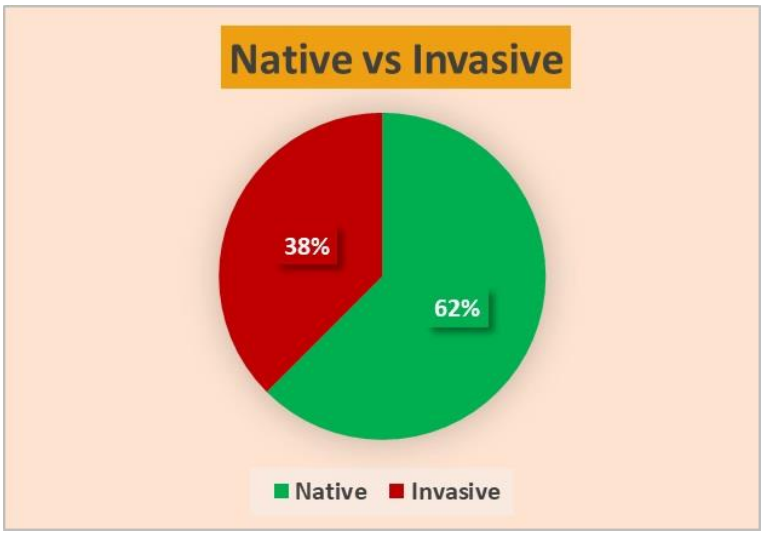
TREES IN QUADRAT 2

S.NO	SCIENTIFIC NAME	LOCAL NAME	GBH (CM)
1	*Eucalyptus tereticornis*	Safeda	140
2	*Pterospermum acerifolium*	Kanak Champa (Muchkand)	35
3	*Pterospermum acerifolium*	Kanak Champa (Muchkand)	27
4	*Ehretia laevis*	Chamrod	23
5	*Wrihtia tinctoria*	Doodhi	112
6	*Shorea borneensis*	Malaysia Sal	55
7	*Wrihtia tinctoria*	Doodhi	70



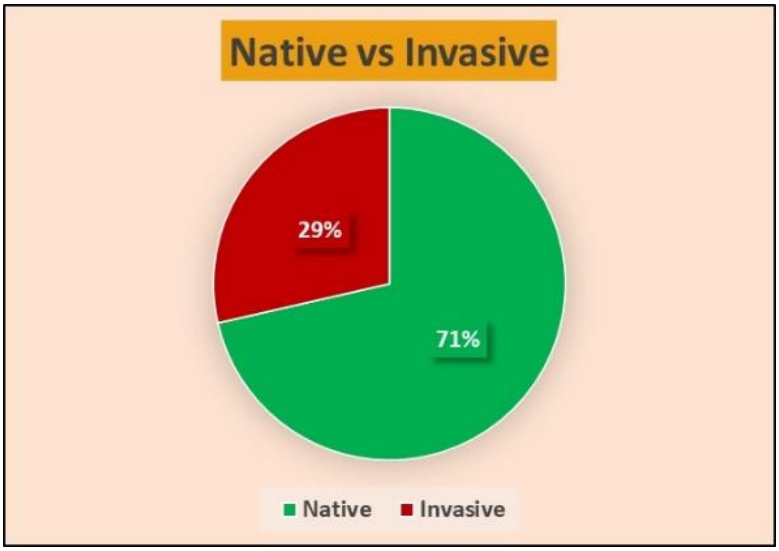
TREES IN QUADRAT 3

S.NO	SCIENTIFIC NAME	LOCAL NAME	GBH (CM)
1	Prosopis juliflora	Vilaiti Keekar	74
2	Prosopis juliflora	Vilaiti Keekar	72
3	Prosopis juliflora	Vilaiti Keekar	48
4	*Wrihtia tinctoria*	Doodhi	15
5	*Wrihtia tinctoria*	Doodhi	16
6	*Wrihtia tinctoria*	Doodhi	26
7	*Wrihtia tinctoria*	Doodhi	22
8	*Wrihtia tinctoria*	Doodhi	18



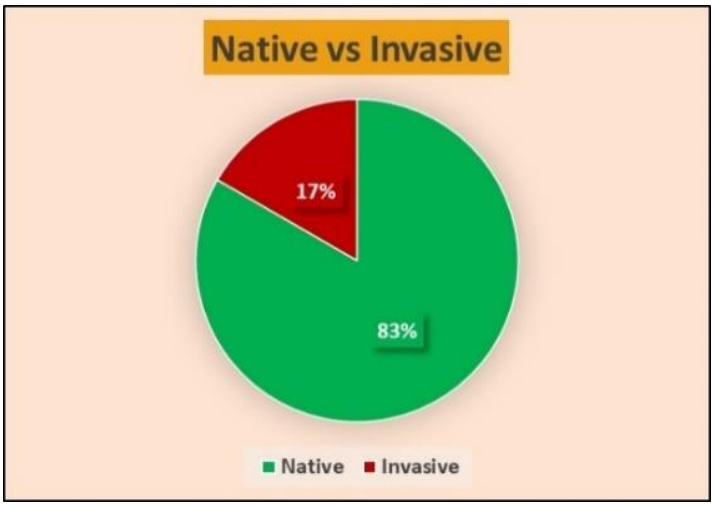
TREES IN QUADRAT 4

S.NO	SCIENTIFIC NAME	LOCAL NAME	GBH (CM)
1	*Prosopis juliflora*	Vilaiti Keekar	235
2	*Ehretia laevis*	Chamrod	25
3	*Acacia leucophloea*	Ronjh	130
4	*Acacia modesta*	Phulai	90
5	*Prosopis juliflora*	Vilaiti Keekar	183
6	*Acacia modesta*	Phulai	27
7	*Acacia modesta*	Phulai	128



TREES IN QUADRAT 5

S.NO	SCIENTIFIC NAME	LOCAL NAME	GBH (CM)
1	*Drypetes roxburghii*	Putranjiva	29
2	*Cassia fistula*	Amaltas	87
3	*Cassia fistula*	Amaltas	60
4	*Prosopis juliflora*	Vilaiti Keekar	63
5	*Cassia fistula*	Amaltas	56
6	*Ehretia laevis*	Chamrod	28
7	*Ehretia laevis*	Chamrod	32
8	*Drypetes roxburghii*	Putranjiva	25



Analysis

As a cursory look at these tables and pie charts reveals, the native species fight back when given a chance. In most quadrats, there was a good number of native trees – flora, which had attained sufficient girth at breast height (GBH) to be called trees – and in some cases had even established a prominent presence.

AWARENESS

PENNING A BOOK

The pen is mightier than the sword, they say. So, inspired by the magic of wilderness, one of us chose to write a book to spread the message. It now finds pride of place in our school library.

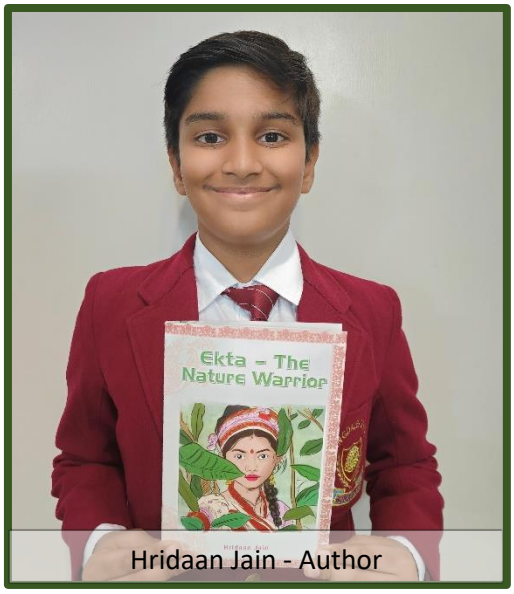
“Ekta - The Nature Warrior”, a collection of short stories, draws upon the lessons on biodiversity learnt from the MCOP5 project and weaves them into compelling narratives that will appeal to fellow students.

At its heart is young, nature-loving protagonist Ekta. In one of the stories, set in Meghalaya, she demonstrates the healing power of nature by helping a property developer’s daughter recover from her illness. In the process, she saves the forest which was under threat from the same developer.

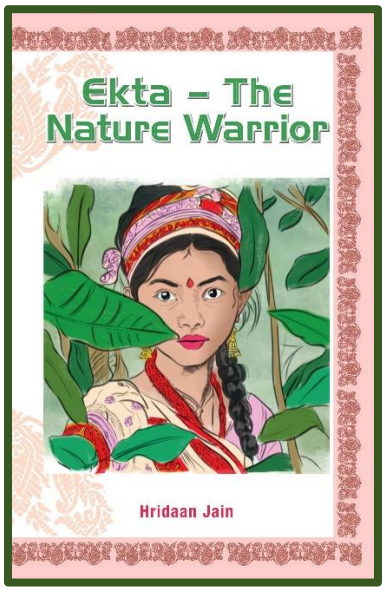
In another story, set in Delhi’s Sanjay Van, Ekta learns how invasive species are impacting native flora and biodiversity. She stops her parents from unknowingly planting Vilaiti Keekar in their garden and goes on to lead a community campaign to restore native plants. Ekta’s journey highlights the power of individual action.

The short stories not only introduce young readers to ecological concepts but also instill a sense of responsibility and empowerment, showing how they can actively protect the environment.

The book is available in our library and will soon be listed on online portals. Our team certainly hopes it will be picked up by children and adults alike.



Hridaan Jain - Author



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AWARENESS WORKSHOP

An awareness workshop was held at our school on 8th and 9th November, 2024 with around 600 students. It aimed to inspire youth action in biodiversity conservation.

We began by explaining the importance of biodiversity - the incredible variety of life that sustains our planet. It was a reminder of the power of collective action in preserving our natural world and a call to action.

Skit

We performed a skit set in the Aravalli hills, spotlighting the struggle between natives and invasive species.

The skit opened with the narrator, introducing the audience to some native characters: a Drumstick Tree, a Lime Blue Butterfly, and a human being, all living in harmony. Their peaceful coexistence is interrupted by the arrival of an invasive Vilaiti Keekar which plans to dominate all other creatures. The skit goes on to show how the other characters realize its true intentions and unite to defeat the Vilaiti Keekar.

Written with a dash of humor, and performed with enthusiasm by our MCOP5 team, it drew much laughter and many claps from the audience, leaving no one in doubt that the message had gone home.

Quiz

Who doesn't love a good quiz! Sure enough, we had a biodiversity quiz in our array of activities. The quiz was insightful and educational, featuring questions that highlighted key aspects of biodiversity and the growing concern surrounding invasive species.

By covering definitions, environmental impact, local statistics, and visual identification, the quiz made many students think critically and raised awareness about conservation challenges in their immediate environment. Made in an interactive format, the quiz helped students connect theoretical knowledge with practical examples.

Audio-Visual Session

An audio-visual session was also held as a part of the workshop, starting with a video illustrating how invasive species disrupt local ecosystems.

A student shared a presentation on the Aravalli Range, the oldest fold mountains in the world that pre-date dinosaurs. An accompanying article emphasized the unique biodiversity of the Aravallis that extend from Gujarat to Rajasthan to Haryana to Delhi.

Another article presented the threats invasive species pose to our city's biodiversity, offering insights into how such species upset the ecological balance and harm native wildlife. Students also shared actionable ways to conserve biodiversity, encouraging everyone to adopt practices that support the local ecosystem.

A self-composed poem, a reflective piece titled "Shadows of Invasion", was also shared by one of the students. It highlighted the message that "every green is not the right green."

Dancing to Nature's Tune

The workshop concluded with a beautiful rendition of "Heal the World" by symbolizing a musical pledge to preserve our planet. Through dance, one of the students conveyed the harmony at work in an ecosystem and the impact of human activities on this balance.

The event was a resounding success, leaving everyone inspired and more aware of the importance of safeguarding biodiversity.

The first step towards change is awareness

Source: All photos are clicked and owned by our MCOP5 team

SOCIAL MEDIA

In the 21st century, social media is a powerful tool of reaching out. Sure enough, our MCOP5 team has spread the word through its Instagram, Facebook and YouTube pages.

Our social media pages give a glimpse of our fantastic field visits, sessions with scientists, restoration drives, and school workshop. We hope they will play a key role in spreading awareness among the youth and parent community about the threat to local habitats from invasive flora.

Our team also hopes the pages will encourage more people to sow native plants in their home and community gardens.

If you want to find out more, follow us on:

https://www.facebook.com/share/CdVPNBX6ZCcZLnH7/?mibextid=LQQJ4d

https://www.instagram.com/springdalesdkmcop5?igsh=NHg5ZzgzdWRjZzRv

https://www.youtube.com/channel/UCGDxEH_5_jL4TaBSryPWmVw

Social media is a platform to express not impress

CHALLENGES FACED BY OUR TEAM AND STEPS TAKEN TO OVERCOME THEM

LAWS

The laws in Delhi prohibit the cutting down of trees to prevent loss of green cover. Also, the presence of bare patches can lead to land being appropriated for construction activities. This will lead to loss of green patch. Due to this, pruning of large invasive species like Subabool and Vilaiti Keekar is the only alternative to cutting.

Solution

- We chose spots pruned by the CEMDE team for planting saplings as these would receive enough sunlight.
- We found many small, young saplings of Subabool and Vilaiti Keekar, which we were able to uproot.

FINDING EXPERTS

For our topic, it was important to find experts who had knowledge of Delhi's flora and had also worked in the field of restoration. Coordinating meet-ups was another challenge.

Solution

- One of the parents was a nature enthusiast and reached out to the green activists she knew. These activists were more than happy to conduct biodiversity walks for us. They also put us in touch with key scientists who had done extensive work in the field of restoration.

DIFFICULTY IN REMOVAL OF INVASIVE PLANTS

It is not advisable to uproot Lantana camara with bare hands as that results in more scattering of seeds on the ground. Close contact with Lantana can also cause skin rashes, stomach ailments and breathing difficulty. Neither can the stalk be cut, as it results in the growth of new branches from the nodes.

Uprooting by hand also results in upturning the soil, helping seeds embedded deeper in the ground to come to the surface and germinate. Burning them down is not advisable as that will burn the seeds of any native flora that may be in the soil.

As for the cut root-stock method, it requires tools and technical expertise on exactly how much of the root-stock should be cut.

Solution

- We as students can assist those carrying out the cut root-stock method as it is labor intensive and we are more than willing to assist in the activity. As removal of Lantana should be followed by immediate planting of grasses and native flora, we as students can take part in the restoration drives too.

PROBLEM IN UPROOTING INVASIVE GRASS

For Parthenium grass, also called carrot grass, again simple uprooting is not advisable as it is toxic. It is known to cause severe allergic reactions to the skin, lungs, and nasal passage. If uprooted physically, the seeds can scatter, and a single plant can throw up 25,000 seeds, which will be counterproductive.

Solution

- Studies say it can be tackled through integrated management - uprooting before flowering but with gloves on; use of a mixture of herbicides while taking care that native grasses are not harmed; and the use of biological tools like the Mexican beetle, which has shown success in southern India. Some studies also suggest spraying of rock salt water on the weed.

DOCUMENTING CHANGE IN BIODIVERSITY

This proved to be an elusive target. When we started out, we hoped to record an increased presence of pollinators like bees and butterflies by helping increase the presence of native plants. We also hoped that we would be able to impact groundwater levels due to greater presence of native species.

But during the course of the project, we realized that nature sets its own pace. Thus, documenting change in the biodiversity of a region over a short span of time was difficult, unless we planted flowering shrubs and herbaceous flora.

Solution

- We relied on quadrats in the Northern Ridge where the CEMDE has already carried out a lot of restoration work. These quadrats did show a strong presence of native trees.

MANAGING LOGISTICS

The project involved juggling many things, as for most part of it school was open and in full swing.

First and foremost, finding time was a challenge. As the topic was new for us, we had to do a lot of reading and research. This was in addition to the extensive school-work and midterm examinations.

It also involved extensive travelling to different parts of the Ridge, which often meant travelling from one end of Delhi to another. The project also took off during monsoon, so it was not only hot and humid but also raining at times.

Solution

- We carpooled to save energy and time.
- We conducted these campaigns after school timings, so the travelling time was a time to relax.
- We wore climate appropriate clothes and drank a lot of water.

It is important to plant the right things in the right places... and also look after them

- Environmentalist Pradip Krishen

CONCLUSION

The MCOP5 Challenge has taught us that nature is a powerful educator. The project brought us face to face with many things that we had until then only read about in textbooks -- biodiversity, ecosystem, symbiotic relationships, parasites, native species – words that slowly acquired real meanings.

It kindled in us a love for the outdoors. It taught us to look at trees, shrubs, grasses, climbers and creepers as living, breathing beings. We saw how they support birds, insects, and other animal life, how they are co-creatures of the world we inhabit, and why they deserve our respect.

We also realised the damage that human intervention can do, even if it's in the name of green cover. The idea that a plant which is native to a foreign region could become invasive in another region, threatening its native flora and biodiversity, was new to us.

There is no quick way out of this manmade mess. Restoring native flora is a slow, ongoing process that will take many years to show success. But as our data from the Ridge shows, it can be done.

During our project, we also did teamwork that would do bees and ants proud! From doing carpools for field visits to contacting experts to being one another's sounding board to executing our workshop in front of around 600 students, we did it together.

To conclude, we cannot but acknowledge the wholehearted support of the scientists, green activists and institutions named in this report. And last but not the least, a shout-out to our school, our mentor-teacher and our mothers who walked with us every step of the way.

Source: All photos are clicked and owned by our MCOP5 team

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