Youth Stewards for Nature 2021 Project Infographics

Youth Stewards for Nature Sharing Session Summary

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Youth Stewards for Nature

NATURE WAY
@ PUNGGOL CENTRAL

Jan

Briefing on Nature Ways Overall Concept and Biodiversity Survey Methodology through Zoom Meetings

Feb

Existing Nature Way Biodiversity Survey Trial @ Sengkang East Drive

Understand biodiversity survey techniques and look at how plants help to enhance biodiversity

Mar

Pre-Planting Site Analysis @ Punggol Central

Understand site issues, how issues can be resolved
Survey on existing biodiversity in the site

Mar

Objectives


Deeper Appreciation for local biodiversity


Enhance Biodiversity


Incorporates Punggol's Heritage


Enhance User's Experience

Plant Selection, design process and considerations

Plant composition & consideration

- Coastal plants
- Colourful plant varieties
- Shade providing trees
- Polinator atracting plants

Apr

OneMillionTrees (OMT) Tree Planting Event @ Punggol Central

Planted our own trees and facilitated tree planting session for people from the community

Site Implementation

Jul

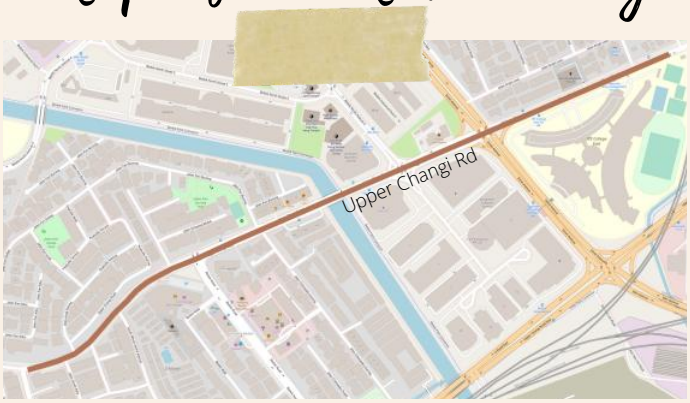
Post Planting Site Survey @ Punggol Central

Record post planting biodiversity and the improvements in the site

South East Nature Way Implementation Project

Kee Jing Ying, Ng Yu Fei, Sabrina Tay

Map of our Nature Way!



What are Nature Ways?

Designed to mimic the forest structure, they are pathways planted with various native flora to promote ecological connectivity for fauna

Objectives

1. Design and implement Nature Ways
2. Engage the community about the importance of Nature Ways

Timeline

- Survey of existing Nature Ways
- Pre-planting site survey & recce
- Plant palette proposal & design considerations
- OMT community tree planting

- Post planting site survey

Our team conducting a biodiversity survey

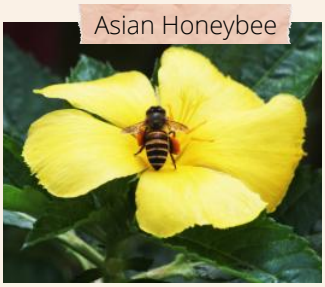
Using wood chips to create convenient man-made path for residents

Before

After

Increasing Ecological Connectivity

Asian Honeybee



Formosan Swift

Increase in **10** species of pollinators

YOUTH STEWARDS FOR NATURE PROGRAMME

Habitat Enhancement Project at Thomson Nature Park (TNP)

Our team of 5 youths planned and organized a tree planting event for Youth Corps volunteers on 17th July 2021. The objective of this project is to support the Lesser Mousedeer and frugivorous birds in Thomson Nature Park, by planting native fruiting tree species.

11 PARTICIPANTS

56 TREES PLANTED

6 TREE SPECIES

- 16/01/21 Opening session for Youth Stewards for Nature
- 24/01/21 Discussion at TNP
- 17/02/21 Pasir Panjang Nursery visit
- 20/02/21 Site survey at TNP
- 23/04/21 Tree planting at Springleaf Nature Park
- 16/07/21 Tree collection at Pasir Panjang Nursery
- 17/07/21 Habitat enhancement at TNP

YOUTH STEWARDS FOR NATURE OMT BOONLAY

JANUARY 2021 - AUGUST 2021

PARTICIPANT RECRUITMENT

We designed posters and put them up at lift lobbies to attract residents to sign up. Amir even went to an Edusave award event and set up a booth to recruit awardees and their families. We also reached out to secondary schools in the area.
We met with the grassroots environmental workgroup (Boon Lay) during the site reccee to synchronise our efforts. We also engaged with residents and allayed their concerns about having new saplings in the area.

TREE PLANTING EVENT

We briefed participants on the One Million Tree movement, the Green Plan and the impact of climate change. During the planting session, we helped participants lift the heavier saplings. With neighbours and residents planting trees together, the sense of community in Boon Lay really shone through. Of course, it was great to take part in some climate action too.
We were glad to have the chance to try out planting trees during the reccee so we could best advise the participants.

POST EVENT REVIEW

After our first plantings session, we realised that participants can plot their sapling on trees.sg and add details themselves so that they have a greater sense of ownership.
Some participants also wished the event was in the late evening instead of early morning as they lived far away while their BTO was being built
We also had to take down the posters we put up and figured out how to optimise the order of posters going up/down.

BIODIVERSITY SURVEY

We went for a biodiversity survey along Jurong Nature Way to record sightings of butterflies and birds and were amazed by the biodiversity. Even though the nature way was next to a busy road, we saw many interesting butterflies. Every sliver of green space helps aid connectivity! We also used NPark's BioAtlas App which aided data collection and makes our findings accessible to the public

SHARING ON RADIO/WORKSHOP

Ee Kin shared his experiences as a volunteer in the One Million Trees movement during an interview with Love 97.2 and encouraged youths to join. Joshua gave a presentation during OMT Workshop about the OMT project with the collated suggestions on ways to improve.

EE KIN

While we had to have smaller group sizes due to SMMs, it was great to be able to interact with residents and talk to them about the City in Nature vision. It was heartening to see so many residents who had no prior experience stepping up.

LI ZHE

Despite the multiple Covid interruptions, I have learnt much from the YSN experience. I am also grateful for the numerous opportunities NParks has shared with us and have gained a better appreciation of the work that NParks does

JOSHUA L.

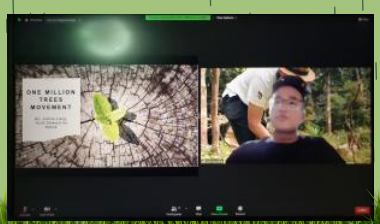
I study Landscape Design & Horticulture at Ngee Ann poly & I enjoy sharing my passion about plants through facilitating for the event to the residents. It is a whole new experience to feel what is it like to be part of the One Million Tree team. I encourage new people to join us in our green movement!

AMIR

I felt that I stepped out of my comfort zone, trying to recruit and also explaining to the numerous volunteers about our project. It also felt good to resonate with some of them in the alignment of our tree planting goals.

ANNA

I am grateful for the YSN experience even if we were unable to do all we set out to due to COVID restrictions. Through our interactions with the public and the guidance from NParks, I am more passionate about the One Million Tree movement and making Singapore a greener place.



NATIONAL PARKS
LET'S MAKE SINGAPORE OUR CITY IN NATURE

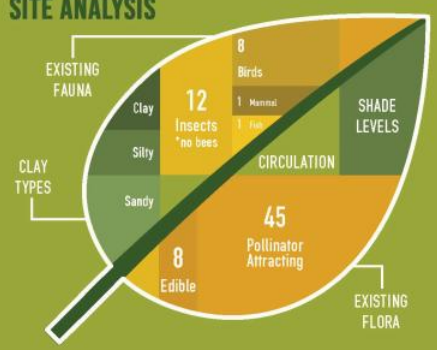
DESIGNING A

POLLINATOR-FRIENDLY EDIBLE GARDEN

IN HORTPARK

Combined site analysis and outreach to create a potential ground for pollinators with attracting and edible plant selection

SITE ANALYSIS



ISSUES TO RESOLVE

Ponding

Surface run-off and rainwater collected in sunken ground could encourage mosquito breeding

Overcrowding Trees

Dense canopy of trees does not allow for shrubs to grow due to lack of sunlight and space

Poor Circulation

Narrow, gravel path in garden is not wheelchair-friendly, making it difficult for a seamless garden journey

OUTREACH

The survey gathered over 100 responses and introduced the following insight on the public's impression of pollinator-friendly, edible gardens (PFEG).

1. People are more aware of edible gardens to pollinator-friendly gardens
2. Low comfortability with pollinators
3. Traits associated with PFEG: Sustainable farming, Grow-your-own-food
4. Sharing further information via QR codes / garden signage
5. Include hangout spots; relaxation and exercise incentives for garden visits

For further information:

PROPOSED DESIGN

BEE-FOCUSED DESIGN

The revised design and planting scheme includes improved spaces, and more variety of pollinator-friendly, edible shrubs that runs the gamut of warm, vibrant colours to create a livelier ambience in the garden. Bee hotels are to also be placed intermittently amongst the vegetation, to encourage habitat building.

*INFOBOARDS

- Understanding pollinators & pollination
- Pollinators "recipes" & menu
- Threats and misconceptions of pollinators
- Safeguarding pollinators
- 'Three Sisters' planting method

HORTICULTURE PRACTICE

This activity involved the selection and documentation of edible plant seeds and cuttings. The selection includes cuttings and seeds such as miniature sunflowers, thai basil, long bean and purple corn. Research was also done on the best care methods such as the frequency of watering, fertilizing and their ethnobotanical uses.

TEAM: Alicia, Alyssa, Christal, Jing Jing, Monica, Natasha, Shin Loon

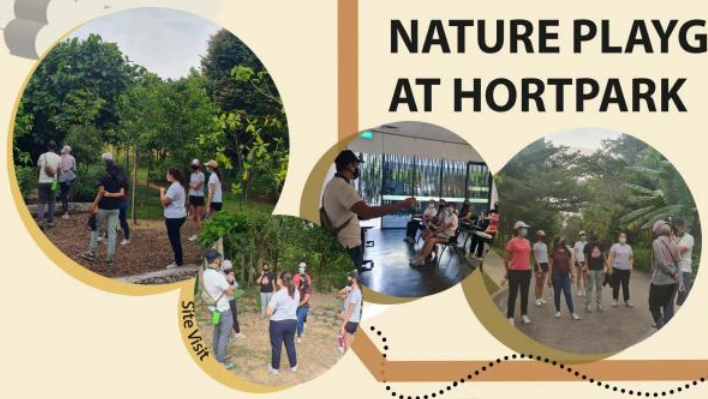
YOUTH STEWARDS FOR NATURE

Nature Playgardens

The objective of the project is to enhance the exisiting playgarden at Yishun Park, as well as conceptualise and plan for a new nature playgarden at Yishun Pond Park.

Youth Stewards : Ai shan, Qian yu, Rachel (Right to left)
Shao yin,Hui lin, Lavanya
Yin xuan, Tanisha

NATURE PLAYGARDEN AT HORTPARK

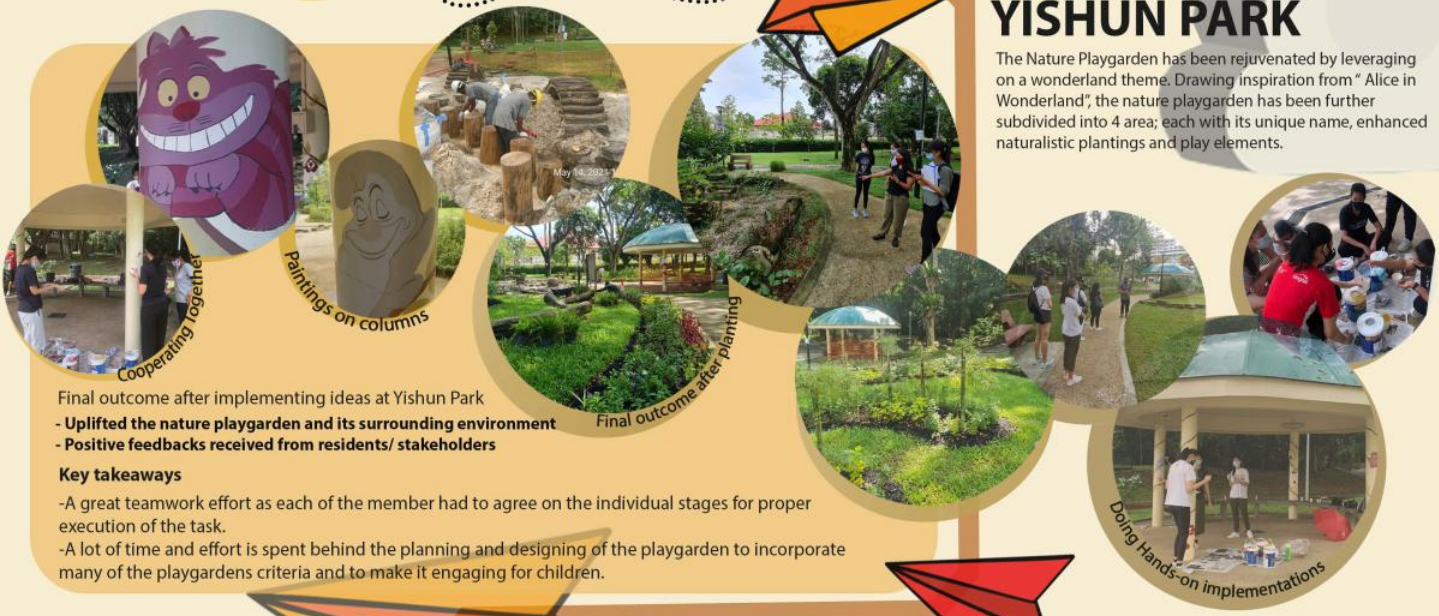


Site visit to understand the concept behind Nature Playgarden.

- **Experiencing the play elements**
- **Understanding the design considerations**
- **Comparing local and overseas examples (eg. Japan)**
- **Brainstorming for the following projects at Yishun Park and Yishun Pond Park**

YISHUN PARK

The Nature Playgarden has been rejuvenated by leveraging on a wonderland theme. Drawing inspiration from " Alice in Wonderland", the nature playgarden has been further subdivided into 4 area; each with its unique name, enhanced naturalistic plantings and play elements.



Final outcome after implementing ideas at Yishun Park

- **Uplifted the nature playgarden and its surrounding environment**
- **Positive feedbacks received from residents/ stakeholders**

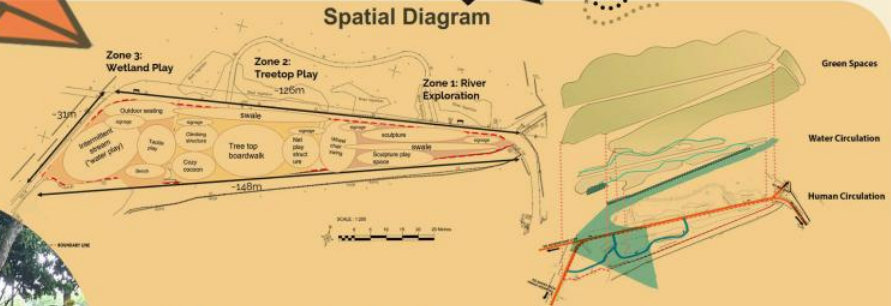
Key takeaways

-A great teamwork effort as each of the member had to agree on the individual stages for proper execution of the task.
-A lot of time and effort is spent behind the planning and designing of the playgarden to incorporate many of the playgardens criteria and to make it engaging for children.

YISHUN POND PARK

The wetland theme has been proposed for the Nature Playgarden at Yishun Pond Park to leverage on the surrounding natural habitats, comprising of small areas of floating wetlands and marshes.

Spatial Diagram



Diagrams to better showcase the circulation and problems of the site.
Proposed new elements to this new project which have not been implemented in the past Nature Playgardens.

Key takeaways

-There is a long thought process that goes into the planning of a playgarden from designing to the actual execution as there is a no one size fits all model for Nature Playgardens in Singapore due to the strict safety standards.
-Valuable opportunity to come up with various ideas to create spaces that inspire curiosity and invoke desires to connect with nature.

DESIGNING & ENHANCING A WETLAND INSECT POLLINATOR-THEMED GARDEN

MAIN OBJECTIVES

1. Design and implement a wetland insect pollinator-themed garden
2. Design and develop an educational walk for the garden
3. Evaluate resulting effects on insect diversity and visitor experience

INSECT BIODIVERSITY BASELINE STUDY ON SITE

INSECT PERCEPTION SURVEY

1. **79.7%** of respondents were interested to learn more about insects found in SBWR
2. **50%** of respondents disliked insects
3. Top perceptions of insects were: scary, interesting, small, cute, creepy and disgusting

TOP 3 INSECT POLLINATOR ORDERS OBSERVED

1. Hymenoptera: wasps, bees, ants
2. Diptera: flies
3. Lepidoptera: butterflies, moths

NATIVE PLANT SPECIES SELECTION

AREA 2 PLANT SPECIES

Leea rubra

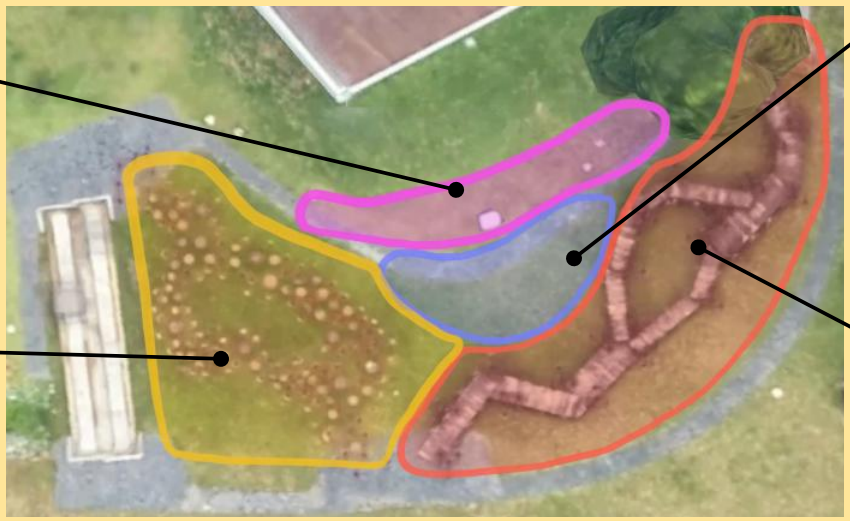
AREA 1 PLANT SPECIES

Melanthera biflora

Ixora congesta

Ardisia elliptica

Melastoma malabathricum



AREA 3 PLANT SPECIES

Melanthera biflora

Dendrobium umbellatum

Pluchea indica

AREA 4 PLANT SPECIES

Melanthera biflora

Ixora congesta

Ardisia elliptica

Memecylon ovatum

PROJECT IMPLEMENTATION

Primarily integrated bee- and butterfly-attracting native plants into our landscape design.

Existing red poles were repainted brown with streaks, representing wood texture to mimic the pencil roots of mangroves. Engaged a small group of volunteers to aid in tree planting at the garden.

PROPOSED NEXT STEPS

1. Educational Sign Boards
2. Self-Guided Walks
3. Post-Implementation Insect Biodiversity Survey
4. Post-Implementation Visitor Perception Survey

**All photos taken by Youths and activities held in accordance with prevailing COVID-19 Safe Management Measures.

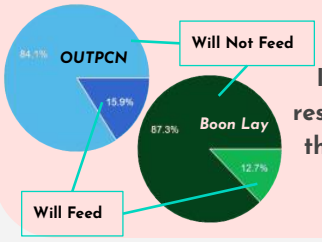
Youth Stewards For Nature: Responsible Interactions with Wildlife

Project Objectives

- **Understanding public perception on wildlife feeding**
- **Developing effective education and outreach initiatives**

Surveys at two feeding hotspots conducted from Feb to Mar 2021

- Old Upp Thomson PCN [Nature Park]
- Boon Lay Central [Residential Area]



In both hotspots, most respondents answered that they will not feed any of the above animals.

Top four outreach platforms suggested by survey respondents

1. Posters/Banners
2. Talks
3. Social media
4. Guided tours

Social Media: Instagram - @wildeye.view Active from Mar to Jun 2021

Three types of posts scheduled::

- *Wildlife Wednesday* - bite-size info on local wildlife
- *Saturday Comic Series* - comic on responsible wildlife interaction
- *Sunday Takeover* - showcasing the team behind the scenes

Special posts: IGTV series on OUTPCN Guided Tour, Behind The Scenes Blooper IGTV Video

188 followers

Of which 51.4% are 25 to 34 years old. [1]

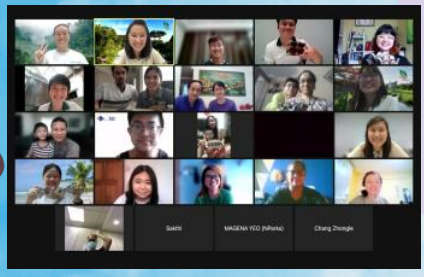
Social media posts featured and reposted by:

@nparksbuzz
@sgyouthvoicesbiod
@wilducation
@gybn_cbd
@unbiodiversity

Guided Tour: The Great OUTdoors @ Thomson Apr to May 2021

- Conducted public guided tour at OUTPCN and Thomson Nature Park on May 1
- May 25 tour in conjunction with Singapore Biodiversity Festival was postponed due to P2HA
- Production of filmed IGTV guided tour episodes for a wider reach

Participants shared that the tour was effective in teaching them responsible ways of interacting with and appreciating native biodiversity.



YSN-BLYN Gardening at Home Workshops

(In collaboration with Boon Lay Youth Network)

Two Zoom workshops conducted on 31 July and 1 Aug

- Introduce gardening as an alternative nature-based activity to wildlife feeding
- Encourage residents to create eco-enzyme solutions using food waste instead of wildlife feeding

The team:

Chew Peng, Karl, Cheyanne, Rou Ming, Yong Jen, Samiksha, Sandy, Wan Ying, Jonathan, Juliana, Ramni, Ruiyi, Tina

[1] As of 2 Aug 2021

"Assessing the urban long-tailed macaque troops in Singapore: A population census"

Youth Stewards for Nature 2021
Done by : Steffi, Faith, Scormon & Ian
Mentors: Jia Hao & Chanelle

Introduction

The long-tailed macaque (*Macacca fascicularis*) is the most common non-human primate in Singapore. Due to its fringe-loving nature, and rapid urbanisation around the country, human-macaque interactions have become more frequent as we encroach into more forested areas. This has resulted in more human-macaque conflicts as the presence of human food attract these macaques into urban areas, where they potentially intrude into private properties and act aggressively towards humans. Hence, to find out more about these urban troops, this project aims to assess the long-tailed macaque population at urban sites around Singapore, by determining the count, age-sex class and habituation levels of the troops.

Survey Methodology

- A total of 18 urban sites were surveyed over the course of 20 weeks.
- Surveys were done at one site per week in the morning (7am to 10 am) and afternoon (4pm to 7pm).
- Teams followed each troop until they were no longer visible, recording the following: the start and end GPS locations, number of individuals and the age-sex class.
- Three reliable maximum counts from each site to confirm troop data.
- Habituation rankings were given based on how comfortable/aggressive the macaques were towards humans, and how often they crossed into urban areas.

Long-Tailed Macaque Age-Sex Class Identifier

Adult Male
- Largest body and testicular size.
- Prognathic facial profile.
- Full canine eruption, and "cape" of longer hair on back and shoulders.

Adult Female
- Approximately 75% smaller in body size compared to adult males.
- Pendulous nipples.
- Presence of peripheral hair around face.

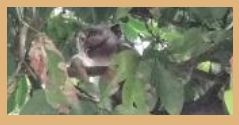
Adolescent
- Approximately 75% smaller in body and testicular size by estimation than adult males.
- Lacked full canine eruption and cape hair.

Juvenile
- 75% smaller in body than sub-adult males or adult females.

Infant
- Black/dark brown coat colour.
- Carried by their mothers most of the time.

How do we ensure that we do not double count?
By taking note of distinct features!

Female with infant.



Male with distinct facial scar.

Female with distinct scar at lower left back

Results

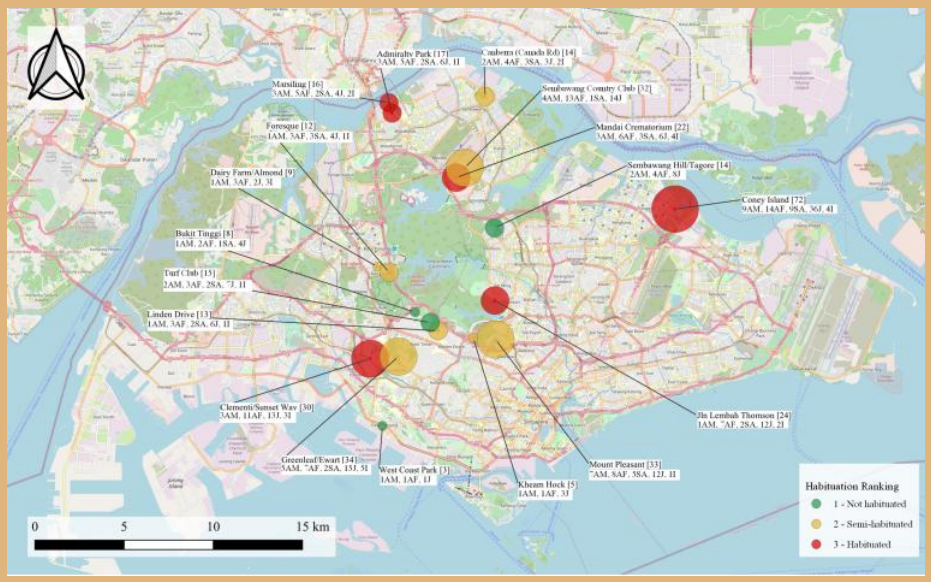


Figure 1: Distribution of long-tailed macaque population density in urban areas of Singapore.

Habituation Rankings:
- Not habituated: rarely enters/cross into urban areas, not disturbed by presence (>10m).
- Semi habituated: enters/cross into urban areas, not disturbed by presence (5-10m).
- Habituated: frequently enter/intrude urban areas, not disturbed by close presence (< 5m).

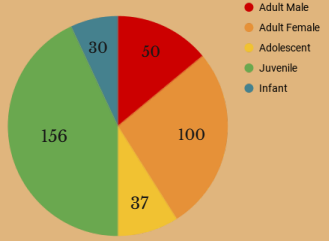


Figure 2: Estimated total population of long-tailed macaque in urban areas.

- In total, 373 macaques were accounted for in urban sites around Singapore.
- The urban macaque population accounts for 22% of Singapore's total macaque population, based on previous counts (Riley et al., 2015).
- The majority of the troops were habituated or semi-habituated, being comfortable in areas with human presence (Figure 1).
- Significantly large troop: Coney Island, where macaques had a large roaming range and used bridges to cross between forest patches.

Observations and Learning Points

- Macaque-human interactions are caused by presence of human-introduced food and feeding.
- "All macaques are aggressive" is a common misconception: We see unhabituated macaques in certain urban areas, with humans being respectful and behaving appropriately towards the macaques.
- The presence of fruit trees in estates encourages the movement of macaques through estates while foraging.
- The bins in parks can be switched to monkey-proof bins such as those with heavy lids that require pulling.
- Future studies can repeat the census with access to forested for a more reliable count.

Challenges

- Seasonal movement of macaques made it difficult to find troops, during month of March and April.
- Inaccessible areas made it difficult to follow troop for some occasions.

Reflections

- Learnt a lot more about macaques, like how to ID age-sex class.
- Gained more insight about human impacts on these urban troops.
- Attained experience conducting population census of mammals.

Reference
Riley, C. M., Jayasri, S. L., & Gumert, M. D. (2015). Results of a nationwide census of the long-tailed macaque (Macaca fascicularis) population of Singapore. Raffles Bulletin of Zoology, 63.

Therapeutic Gardens (TG)

uses evidence-based design principles, gardens are curated to promote **physical** and **physiological** well-being of individuals

Restore attention

Relieve stress

Connect with nature

Therapeutic Horticulture (TH)

uses plants and nature-related activities to encourage **mindfulness**, stimulate **memory**, and to train **fine motor skills**

Objectives

To help improve the **mental, emotional** and **physical** well-being of individuals
Forge stronger **social ties** and **community spirit**

TH Engagement Projects

Fine motor skills

Adaptive Facilitation

Connecting with nature

Community Spirit

TG Design Projects

Bukit Batok Zone 2 Garden

353A Admiralty Drive

Key takeaways

- Learning how to engage and interact well with individuals of vulnerable communities such as elderly and the special needs.
- Heartened to see the immense support and receptiveness received by the various organisations we engaged.
- Significant mental, social and physical wellness can be promoted by the implementation of more therapeutic gardens and TH programmes.

YSN Participants
Chloe Foo Yunn Shah
Zhang Han Xiang

YOUTH STEWARDS FOR NATURE

How might we activate PCNs through interactive programming to encourage & maintain intentional use of PCNs to create connections with people and space?

- **FEB** — Conducted ground research on PCNs
- **MAR** — Identified gaps & opportunities, attended Design Thinking Workshop
- **APR** — Conducted site visits & interviews
- **MAY** — Analysed data, started ideation & prototyping
- **JUN** — Trialed & refined prototype
- **JUL**

REFINED SOLUTIONS
using our design principles

Social Media: Instagram Posts

1) GRAPHICS-BASED

Graphic cover to capture attention

Bite-sized facts about PCNs

2) PICTORIAL-BASED

Caption highlights interesting PCN features or activities

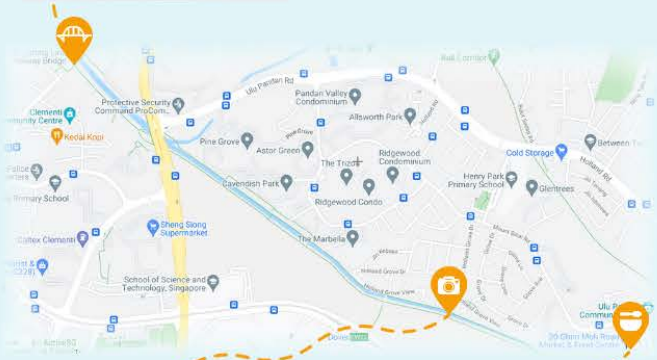
3) SHORT VIDEOS

Short videos convey uniqueness of PCNs to attract visits

- Peak engagement times are during key break times (i.e. mealtimes and just before and after sleep hours).
- Provide relevant links to existing sites and programmes (e.g. Coast to Coast Trail).
- Collaborate with relevant interest groups to increase publicity (eg. Singapore Brides, birdwatchers, cycling groups).

Themed Trails: Blooms in SG

- Promote intergenerational community building with age-inclusive activities.
- Encourage interaction between PCN users to promote community building and cultivate positive etiquette.
- Easy-to-follow instructions to cater to all ages and abilities.



- Highlight local flora and fauna to pique interest of PCN users.
- Collaborate with local food establishments to cater to #SupportLocal.

- Activate lesser-known PCNs (e.g. Ulu Pandan PCN) to draw crowds away from nearby congested nature areas.
- Trail is sustainable due to perennial trumpet trees, and easily adaptable to user feedback and crowd size.

TIPS

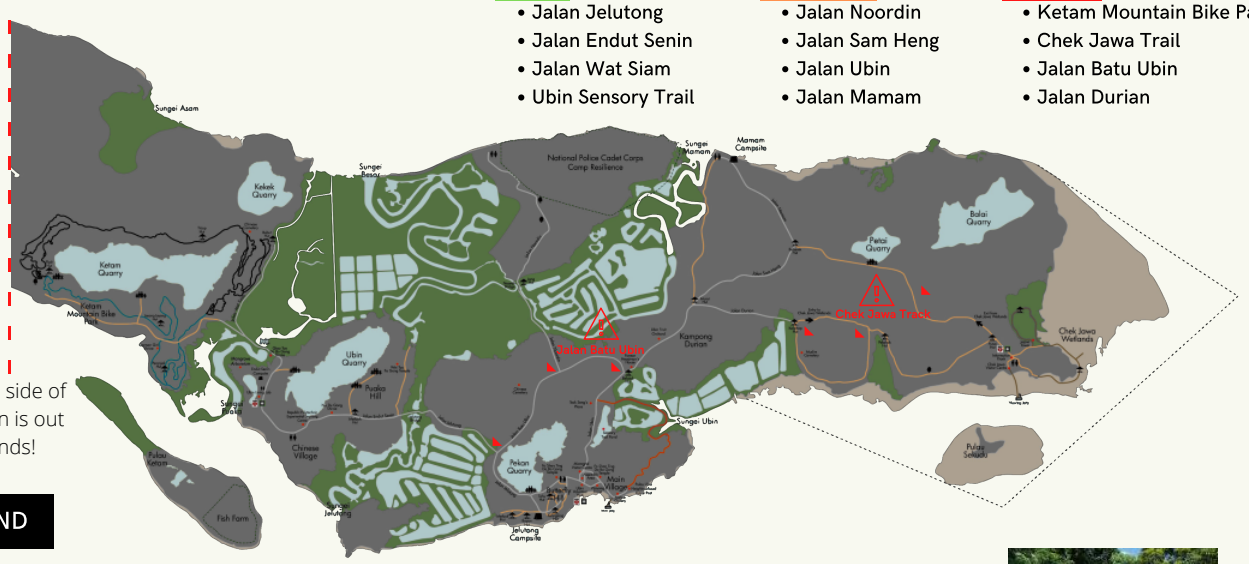
FOR CYCLISTS

Difficulty level of cycling paths:

Easy:
- Jalan Jelutong
- Jalan Endut Senin
- Jalan Wat Siam
- Ubin Sensory Trail

Moderate:
- Jalan Noordin
- Jalan Sam Heng
- Jalan Ubin
- Jalan Mamam

Difficult
- Ketam Mountain Bike Park
- Chek Jawa Trail
- Jalan Batu Ubin
- Jalan Durian



*The west side of Pulau Ubin is out of bounds!

LEGEND

- Intertidal area
- Mangroves
- Point of interest
- Heritage trees
- Campsite
- View point
- Shelter
- Toilet
- Jetty
- Bridge
- Road
- Earth track
- Boardwalk and Jetty
- Sensory trail
- Blue Square Grade trail
- Black Diamond Grade trail
- Prohibited area
- Boundary
- Accident-prone sights
- Steep Slope

*When approaching a steep slope downhill, please apply your rear brakes gently to slow down. Do not apply your brakes suddenly or lock your wheels.

Example of a steep slope at Jalan Batu Ubin

YOUTH STEWARDS FOR NATURE

INTERPRETING THE LIVING COLLECTIONS

INTERPRETIVES are important features of nature areas that improve the visitors' experiences. They can be characterised as:

1. A bridge between information and visitors
2. Provision of new experiences
3. Clear and organised
4. Theme-based
5. Facilitates self-learning among visitors
6. Understands and respects the visitors

OBJECTIVES OF STUDY

1. To find out how visitors interact with the current Living Collections' interpretives
2. To assess the effectiveness and impact of the current interpretives
3. To propose some area of improvements for the current interpretives

OBSERVATIONAL STUDY

Adapting from the System for Observing Play and Recreation in Communities (SOPARC), a standardised observation survey can be carried out to assess the readership of the current interpretives. The proportion of people that stops to read the interpretivesas well as the socio-demographic characteristics of readers will be quantified to provide a broad idea of the public's perception on the current .

VISITOR SURVEY

A visitor survey can be conducted to better understand the effectiveness and impact of the current interpretives, and to get the public's opinion on possible improvements. Questions have been carefully crafted to minimise bias and to obtain as much information as possible, such as the influence of demographic on the attitude towards interpretives.

RECOMMENDATIONS

1. Conduct the observational study and visitor survey when the pandemic gets better
2. Host events to get visitors to design their own interpretives
3. Introduction of online interpretives

Bin-Free Singapore Botanic Gardens

Aims:

(1) investigate the attitudes of visitors with regards to a bin-free initiative in SBG through a survey,
(2) suggest a partial bin-removal trial, and
(3) raise visitors' awareness of the future bin-free initiative through an educational campaign.

Reasons & Rationale

Environmental Benefits
Aesthetics
Role model for other parks

Survey: Attitudes towards bin-free

- Field survey conducted at SBG
- 45 responses
- Results:
  - main activities: picnicking and exercising
  - 60% did not notice a reduction in the no. of bins around the Eco garden/Botanic Gardens MRT area
  - 35 respondents reported that a bin-free SBG would be inconvenient, but more than half supported a bin-free initiative given that it is a step towards helping the environment.
  - 80% of respondents were willing to carry their trash out of SBG

Bin Removal Trial

Removal of bins in these areas:

- Along Running paths
- Popular Picnic Areas

To investigate whether there would be an increase in littering and complaints

Educational Campaign

Banners at the entrance
Stickers placed on bins
Comic strips on lamp posts

AM I ACTUALLY HELPING THE ANIMALS BY FEEDING THEM??

Animals in the Singapore Botanic Gardens depend on wild plants and insects to survive. Swans have a specialized diet that consists of specially-formulated duck pellets and fresh vegetables. Since swans are very sensitive to what they eat, they ought to follow a strict diet based on a vet's recommendation!

Human food, such as bread, is harmful to their diet and would even cause death! Since these animals can be considered wild animals, they might lose their natural hunting instincts when people continue to feed them. They will become reliant on human food, and may even flock or gather around the main feeding sites. Feeding upsets the ecological balance in their natural environment and could lead to pollution of our water and environment.

WHO ARE WE?

We are a group of passionate students who share posts on social media to spread awareness about the dangers of feeding animals in the Botanic Gardens. We also hold events and conduct interactive activities to promote positive human-animal interactions! Join us in combating animal feeding!

Follow us on our socials:

SINGAPORE BOTANIC GARDENS

NPARKS YSH Pekan Quarry

Citizen Science Bird Survey

September 2021 - 2022

OBJECTIVES

To encourage public participation in the monitoring of the bird population at Pekan Quarry nesting platforms. We hope that participants develop a deeper appreciation for the biodiversity at Pekan Quarry, and for Singapore's larger conservation efforts.

What We Did

Using a Google Form, we gathered data on

Weather,

Tide,

Date & Time,

Number of birds.

What This Means

Through citizen science,

we can monitor how various conditions

affect nesting and roosting behaviour of birds.

What Next?

Potential to install a mounted telescope at Pekan Quarry View Point.

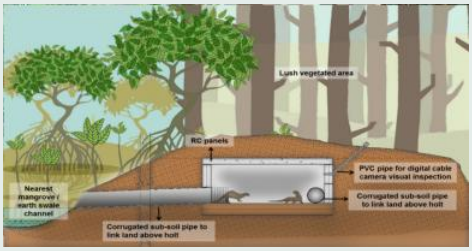
Potential to expand project to other habitats and taxa.

SPECIES RECOVERY PROGRAMME:

ASIAN SMALL CLAWED OTTERS *Aonyx cinereus*

Found at the mangroves near the rivers on both Pulau Ubin and Pulau Tekong islands.	diet mainly consist of crustacean and molluscs, fish and small mammals and reptiles.	Campared to smooth coated otters,ASCO more elusive, smaller in size and are nocturnal difference in body feature like flatter snout, partially webbed feet, reduced claws.

2 OTTER HOLTS constructed at Pulau Ubin

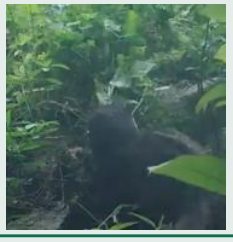
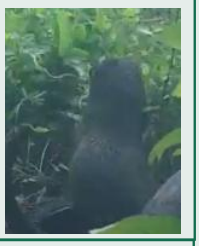


TIMELINE

- 2016 - Both otter holts were constructed.
- 2018 - A family of 4 ASCO were using one of the holt.
- 2019 - Another family of 4 were observed using the same holt.
- 2021 - Two otters were captured using the second holt for the first time. (YSN Period)

BEHAVIOR OBSERVED

The ASCO were observed marking territory with their spraint and gather vegetation to line the holt as bedding.

LIMITATIONS AND SOLUTIONS

- Not able to monitor the holt internally.
- Limited behavior recorded with only 1 camera trap.
- No Real-time update on the visits of ASCO if sample collection of scats is needed.


- Replace PVC pipe with trapdoor where holt can be accessed to obtain camera.
- Increase placement of camera trap.
- Using cameras with mobile networks that can send notifications to mobile phone when motion is detected.

blue-crowned hanging parrot

Scientific Name: *Loriculus galgulus*

Range: Found all over the Thai-Malay Peninsula, stretching down to Sumatra and Borneo.

Location: Any suitable patch of habitat - as found in this project

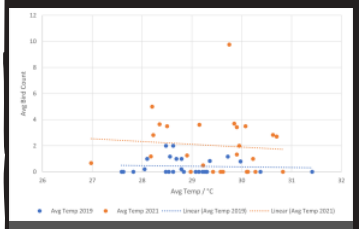
Adult: The blue-crowned hanging-parrot is a short-tailed parrot that grows to just between 12 and 14cm, making it Singapore's smallest parrot

Juvenile: Wholly green mantle, and green rump with feathers margined with red. Most noticeably, their bills are colored yellow or light brown instead of black.

Hypothesis:

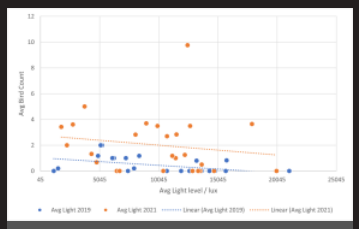
An increase in sound levels would result in a decrease in the number of BCHP observed

Results:



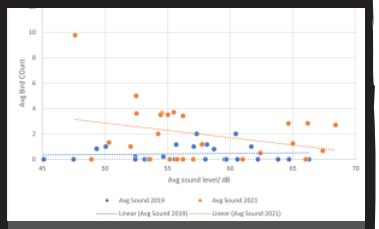
Graph showing Avg bird count based on Avg temp (2019 vs 2021)

As the temperature increases, the avg bird count decreases



Graph showing Avg bird count based on Avg light (2019 vs 2021)

As the light intensity increases, the avg bird count decreases



Graph showing Avg bird count based on Avg sound (2019 vs 2021)

As the sound level increases, the avg bird count decreases

Conclusion

Abundance of blue-crowned hanging parrots are affected by many types of factors (Light, Sound, Temperature, etc.)
However the main factor of the abundance of blue-crowned hanging parrot is SOUND
As sound decreases, mainly from urban to rural areas, Blue-crowned hanging parrots increase. They are most probably affected as the loud sound prevents them from communicating via bird calls in the wild.