NPU STUDENT AMBASSADOR

TOOLKIT 3: BIODIVERSITY ACTIONS ON CAMPUS

Image credit: Nature Positive Universities, RICA, Rwanda

NATURE POSITIVE BY 2030

NATURE POSITIVE UNIVERSITIES

UNIVERSITY OF OXFORD

UN environment programme

UNITED NATIONS DECADE ON ECOSYSTEM RESTORATION 2021-2030

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Taking action for nature

Taking action for nature is in many ways the focus of this programme and hopefully the most fun part too! Increasingly, biodiversity is being recognised as a cornerstone of a healthy, happy, prosperous and sustainable university space.

Biodiversity is short for "biological diversity", the variety of life on earth. It includes all living organisms and the ecosystems in which they occur. Abundance and diversity of ecosystems, species, and genes and the interactions between them are a key part of biodiversity. Together they create an intricate balance that ensures the continuance of life in the natural world and the provision of oxygen, fresh water and a wide variety of natural resources that are essential for us.

From habitat destruction and pollution to our use of natural resources, humans are taking their toll on the natural systems which keep the world functioning properly.

Working with campus staff

We recognise that students in higher education institutions around the world will have different opportunities available to them to create change on campus. You will need to seek permission from your university staff to engage with most campus biodiversity projects - you may be able to join existing university or community-led initiatives or start your own with their help and support.

You might like to contact your estates or facilities management team, sustainability staff, or grounds manager. Every university structure is slightly different, so you could ask your tutor or student union for help to navigate the right people to contact.

Working with campus staff

Tips from Student Ambassadors in Workshop 3:

Which kinds of staff to work with?

- “The Biodiversity Officer and the Sustainability Team are a key contact to reach out to Grounds and Estates teams of the university.”
- “Find staff who have an existing interest in facets of nature who will be more likely to agree.”
- “To engage University staff with your work, one should go up gradually through the chain of command.”

Tips for building a relationship with staff

- “Have a clear idea of what you want from them so that you can be clear and convincing.”
- “I think it's just about building the relationship because majority of them are ready to support you.”
- “Show them the value of students, and have win win situations to make good connections.”
- “Be aware of budget constraints that staff may have. Its important to find staff who will listen and that you can trust not to be involved with greenwashing .”
- “Arrange expo / or information sessions for staff and students to present your ideas.”

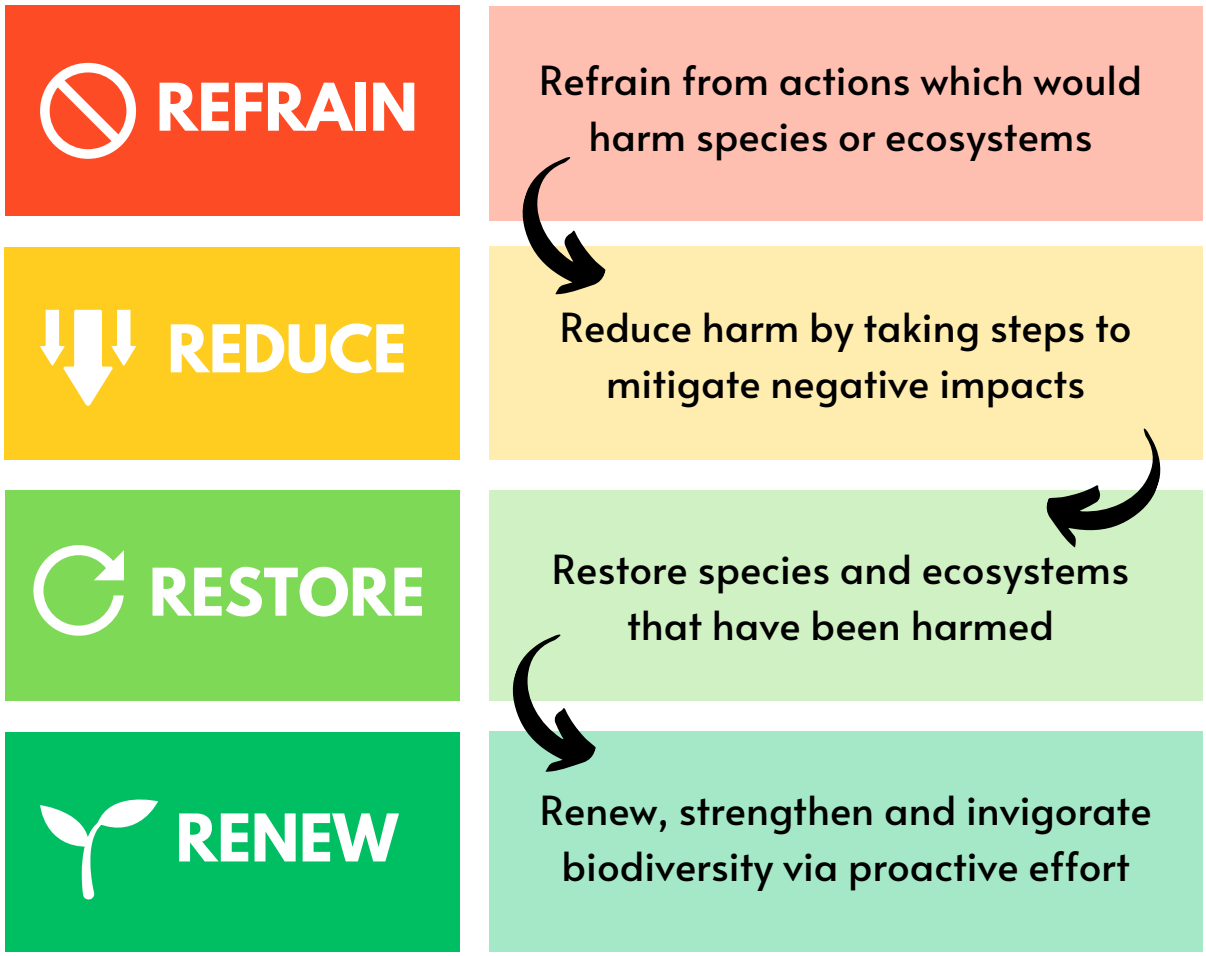
What kind of permissions might be needed for activities?

- “Sometimes you will need to register as an official student group or society to be able to carry out activities on campus.”
- “Make sure you have permission from relevant staff (eg grounds manager, gardening staff, sustainability team) before engaging in actions affecting biodiversity on campus.”

Conservation Hierarchy

A great framework to help planning actions and to work towards achieving conservation goals is the Conservation Hierarchy, which we promote throughout the NPU programme. This provides a hierarchy of principles to first prioritise avoiding and reducing harm to biodiversity, before restoring damage, and finally engaging in proactive measures to create new habitats, support species and strengthen ecosystems.

We support you taking action at any level, but refraining and reducing harm first can be a longer term solution to halting and reversing biodiversity loss.



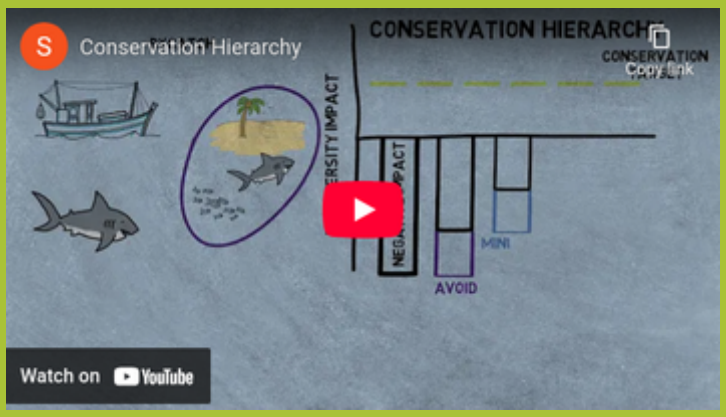
Actions at all levels:

The Conservation Hierarchy draws from the well-established Mitigation Hierarchy approach to structure biodiversity targets, illustrating how they collectively contribute to an overarching vision for nature.

The Conservation Hierarchy recognises that some losses of nature are inevitable, but by mitigating negative impacts when possible and promoting proactive actions where we can, we can achieve positive outcomes for nature.

This approach is flexible; any action or target, such as protected area targets, or species-orientated targets, can be readily incorporated and set within a wider vision for nature. It can be applied to any context, such as in universities, and also governments and businesses at any scale, whether that be national, local, project or individual.

Click here to watch this video for more information on the Conservation Hierarchy



Want to find out more? Visit the Interdisciplinary Centre for Conservation Science (ICCS) website here and view this document from the Convention on Biological Diversity (CBD).

Actions at all levels:

The below table represents a range of actions that can be taken at your university at each step of the Conservation Hierarchy. Most actions will require support or permission from your university:

REFRAIN	• Campaign for avoiding use of harmful chemicals for grounds maintenance • Raise awareness to avoid littering and waste pollution	• Develop policies and services to avoid waste pollution • Avoid lighting that interferes with wildlife
REDUCE	• Work or campaign to reduce mowing on campus • Reduce water pollution by advocating for waste management services	• Reduce bird strikes by modifying glass buildings • Reduce fauna collisions by signage and speed limits on campus roads
RESTORE	• Litter pick to restore degraded areas of campus • Removal of invasive plant species	• Replace exotic plants with native to support wildlife • Establish green roofs and walls on hard surfaces
RENEW	• Creation of bug hotels and nest boxes • Change management of lawns to create of meadow areas • Build shrub and container gardens	• Create log piles, pond habitats and wilder areas of campus • Help create a wildlife hedge with native species • Create new woodland areas on campus

Case Studies - Refrain

Students commemorate World Clean Up Day in Lagos

Students from several Nigerian Universities joined together with their local communities to commemorate #WorldCleanUpDay2022 and #LeaveNoTrace campaign by organising several clean up events in September 2022. Litter pick events took place at Kontagora market, Lagos, and Uselu market, Benin City, Nigeria. Friends of Nature student group, University of Benin co-organised the events, which raised awareness and demonstrated opportunities to restore degraded areas of land and build pride in the local environment.

Photos credit: Favour Eragbie, Friends of Nature Network, University of Benin, Nigeria

Case Studies - Refrain

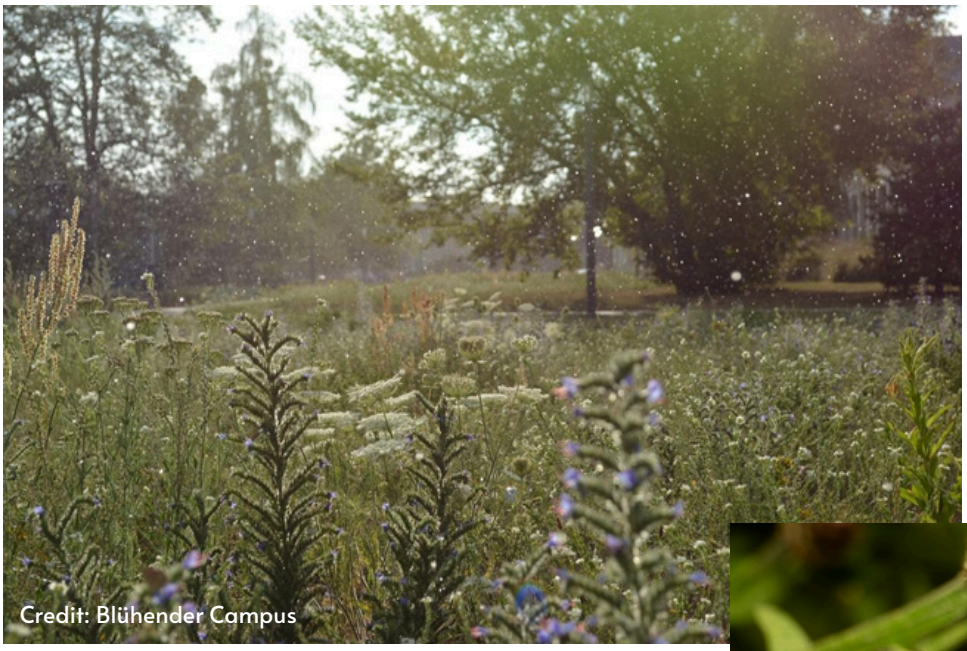
Develop institutional policies to avoid waste pollution and provide supporting infrastructure, Bournemouth University, UK

The focus at Bournemouth University (BU) is on reducing the overall volume of waste produced per person. They are tracking this against a goal of keeping campus waste produced to well below 20kg/FTE/yr (non-construction and non-residential). Actions being taken to reduce the amount of waste produced includes: encouraging students to refill water bottles through their status as a 'Refill Campus' with City to Sea, introducing an innovative 'Cup Exchange Scheme' and implementing a 'No Disposable Cups Week'. BU also have a target for construction waste for 95% to be recycled.

Students helping with a waste audit

EDfest 2022 beach clean

Case Studies - Reduce



Credit: Blühender Campus

Blühender Campus (Campus in bloom), Freie Universität Berlin, Germany

"Blühender Campus" (Campus in bloom) is an interdisciplinary initiative started in order to focus more on biodiversity. It unites projects and actors who have the aim to encourage biological diversity on campus. The focus of the work is the upgrading of the green and lawn areas that were mowed up to nine times a year in 2019. The mowing of all areas has been significantly reduced since 2020 (depending on the weather and use only about five times) and pauses across campus during the early flowering phase in April. In a pilot project, some very different, species-rich flowering areas are currently being created on around eight hectares.

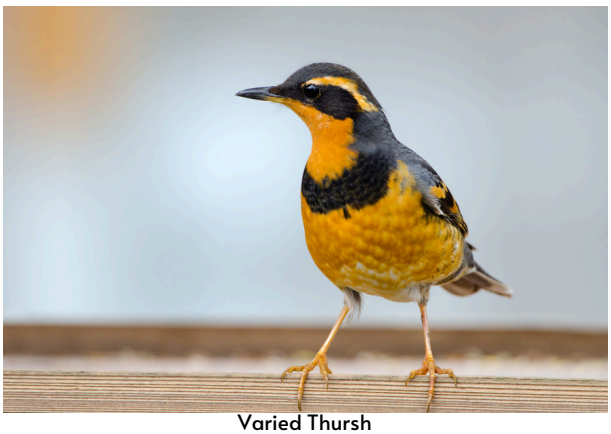
Case Studies - Reduce

Bird friendly buildings at UBC, Canada

Vancouver's shiny, tall, mirror-like buildings are an attractive and much-photographed sight. So too is the local wildlife, with Vancouver boasting one of the highest densities of wintering birds of any Canadian city. Unfortunately, the combination can turn those beautiful reflective glass windows into bird killers. Despite the numbers, bird strikes are an ecological issue not many people are aware of. At UBC, researchers and staff are working to change that, with a grassroots effort to bird-proof buildings.

Two of the most common birds that collide with buildings at UBC Vancouver:

American Robin



Varied Thursh

Work to reduce mowing on your campus

Why?

Decreasing the frequency of lawn mowing promotes insect and plant diversity. It also discourages removal of 'weed' species which may be vital nectar and pollen sources for urban insect communities.

Where?

Campus grounds and gardens. Anywhere with intensively managed lawns will benefit from this change; it may be especially desirable in less conspicuous areas.

How?

Speak to your university grounds staff and encourage them to wait as long as possible between mowing lawns - do so only when the grass has become unbearably long, keeping in mind that longer grass is of greater benefit to biodiversity. In the UK, you can find grassland management guidance online.
It can be useful to consider signage to explain why areas look more 'messy' than with traditional management (see examples below)

Case Studies - Restore

Litter pick to restore degraded areas of campus at Abomey-Calavi University, Benin

Students at Abomey-Calavi University in Benin celebrated the first International Day of Zero Waste on 31st March 2023 by organising a litter pick to restore degraded areas of campus, collecting a total of 5131 pieces of litter. This has developed into a “No waste on my campus” campaign, promoting proper waste disposal and recycling options, and presenting alternatives to commonly littered items such as plastic bags.

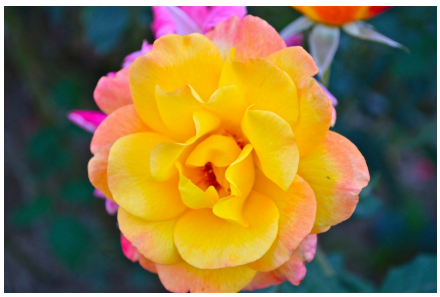
Case Studies - Restore


Credit: UCLA

Species found at Stone Canyon Creek:


Allen's Hummingbird


Yarrow


California rose

Stone Canyon Restoration Project at UCLA, United States

UCLA students, staff, and faculty have partnered with The Bay Foundation and thousands of volunteers to help restore the ecosystem of the only natural creek on campus. These efforts are currently led by Professor Alison Lipman and the student organization Ecological Restoration Association at UCLA. Serving as a "living laboratory", this area teaches students how to restore natural habitats by removing invasive species and allowing natives to thrive. Volunteers continue to eliminate invasive vegetation, replant the area with native vegetation, and restore the ecosystem. The newly established vegetation removes pollutants from the water and serves as habitat to birds and other wildlife on campus.

Case Studies - Renew

Nurse Logs Protected on Campus at Dawson College, Canada

Dawson College have started a “nurse log area” in their parking lot. The logs are placed specifically around the grounds to attract insects that depend on decomposing trees and for mushrooms. There are 120 year old trees that are being cut down due to structural weakness, but they are being let to return to the earth where they have stood for so long. There is also an indigenous ceremony of gratitude held for any tree over 100 years old before it is cut down.

Case Studies - Renew

Building bee homes and raising awareness at Ahmadu Bello University, Nigeria

In 2024, a group of Nature Positive Student Ambassadors at Ahmadu Bello University carried out a 3-week bee homes project, where they worked in collaboration with the university administration, staff and students to build and install several bee homes on their campus. The project involved researching and consulting local experts to design the bee homes, engaging staff and students through social media, campus noticeboards and information sessions and installing the homes around campus. Overall the project raised awareness of the importance of bees as well as biodiversity on campus.

Case Studies - Renew

Creation of wildflower meadows at Nottingham Trent University (NTU), UK

NTU Conservation Society (ConSoc) sowed wildflowers outside accommodation blocks at the Brackenhurst Campus as part of their efforts to create habitats and support biodiversity on campus. The ground was first prepped by raking away loose plant matter and then sowed the seeds onto the bare ground. It is hoped that, with support from teams across the university community, ConSoc may be able to measure the carbon-storing contributions of wildflower and subsequent tree planting to help NTU achieve its Net Zero Carbon 2040 Target.

Case Studies - Renew

Photo credit: Jielan Zhong

Creation of rain garden at Peking University, China

Students at Peking University China led an initiative to convert a 300-square-meter lawn into a vibrant rain garden, fostering biodiversity and improving stormwater management on campus. Working with students from diverse disciplines, native planting strategies were designed and implemented to support local pollinators and ecological resilience. This project not only restored natural habitats but also created an outdoor educational space, combining landscape design expertise with community engagement to actively combat nature loss and reduce flooding on campus.

Build bug hotels and nest boxes

Why?

Providing the space for birds and bats to shelter or build a nest will aid them during nesting season and provide refuge for various species depending on the box size. Insect boxes are more crucial than ever today with increasing biodiversity loss and lack of rotting wood habitat - they provide the small spaces insects use to shelter, aiding the survival of a wide range of species.

Where?

The boxes can be installed in a wide range of locations. They can be secured to a brick wall, tree, or insect boxes can be placed on the ground. Their effectiveness can be maximised with other biodiversity enhancement strategies such as wild corners to provide a larger, enriched habitat and shelter.

How?

1. Make or buy the boxes: guides on how to build them are available online. Insect boxes are the simplest and cheapest to make: materials include hollow bricks, bamboo canes, cardboard and a roof for shade and shelter. A variety of sizes and shapes will accommodate a greater diversity of wildlife.
2. Find a location to install the boxes. Bird and bat boxes can be installed on a wall or tree, and insect boxes can be placed in the corner of a garden or patch of land. Ensure the boxes are properly built with adequate habitat surrounding them.
3. Leave the boxes to be occupied. Camera traps inside bird boxes can be used to view the species making use of them and might reveal some surprises!

Develop wild corners: log piles, pond habitats, and scrub

Why?

Gardens can be good for wildlife but typically lack the undisturbed, shaded & overgrown habitat that attracts threatened wildlife like hedgehogs and amphibians. A small undisturbed area can provide habitat for neglected wildlife whilst maintaining a good-looking garden. Wild corners allow multiple actions from the toolkit to be carried out in a small space e.g. a small pond, wildflower patch or even log pile. The corners can be extended to agricultural fields and along with hedgerows provide buffers for habitat areas, even helping to reduce soil erosion and runoff.


Credit: Dawson College

Where?

Wild corners can be created in any small patch of land, Larger spaces accommodate a greater diversity and number of species, but multiple corners allow multiple different habitats to be incorporated into the same garden (eg. both a wildflower patch and log pile). With respect to fields, 0.5ha of undisturbed grassland is suitable to protect the habitat and wildlife surrounding and entering the field margins.

How?

1. Mark out the area to be made into the wild corner. This should be a suitable size to house the species but to be left undisturbed for extended periods without use as part of the garden/field.
2. Introduce the materials to the wild corner. This may involve digging and lining a small trench to fill with rainwater as a shallow pond, a log pile or long-grass and flowers. An overgrown log pile is very cheap, requires next to no maintenance and will help to provide space for the most threatened wildlife.
3. Leave the land undisturbed; wildlife will find it and use it, and if the land has been developed sufficiently no further modifications or maintenance will be required.

Build shrub and container gardens

Why?

Shrub and container gardens can enhance biodiversity in areas that have few resources for nature. Introducing a range of flowering plants will enhance plant diversity, provide resources for pollinators and habitat for other insects. At a large enough scale these benefits will transfer to other aspects of biodiversity, for example increasing invertebrate food sources for birds.

Where?

This is a great option for locations where there is limited greenspace, for example in a paved university courtyard or roof garden. You can get creative, using hanging baskets or window boxes to introduce plants to a variety of locations. Container gardens can also enhance the indoor environment, although the main benefits will be to the humans using these spaces!

How?

1. Containers are cheaply available or repurpose existing tubs and pots. The bigger the better, but select your container for your intended space.
2. Fill the containers with peat-free compost.
3. Select your plants, you can sow native wildflowers or plant plug plants. These can be augmented with ornamental species, particularly those selected for their benefits to pollinators and other invertebrates. Planting is best in early spring or autumn. If using seeds, sow in early spring.
4. In hot weather, containers will need watering to stop them from drying out. Trimming and cutting back some species may be necessary in the autumn, but leaving dead vegetation over winter can provide habitat for insects.

Help create a native wildlife hedge

Why?

Hedgerows are an important habitat for a range of wildlife, including birds, bees and butterflies. Hedges may also improve living conditions within universities – Abhijith and Kumar (2019) found hedges to be effective at improving air quality, and they also substantially contribute reduce noise.

Where?

Though they can be planted almost anywhere, hedgerows provide the most benefit if they are connected to a network of hedgerows/woodlands - these act as wildlife corridors. Hedges can often be chosen in place of a fence.

How?

Select a mixture of native hedging trees and shrubs to plant.

1. At the desired location, remove weeds and large stones. Dig over the area and add organic matter if needed.
2. Planting is best done between autumn and spring, and when the ground is not frozen or waterlogged.
3. The plants should be placed in a staggered double row roughly 0.5 m apart - specific spacing depends on how large each plant will grow. It is better to leave more space if unsure as gaps can be filled in later.
4. Water generously and cover with a thick layer of mulch to reduce competition between the young hedge and any 'weeds' which may grow.
5. Feed the hedge and top up the mulch every year - for the first two years, occasional watering may be required.
6. Prune the hedge in the autumn, as nesting birds will not be disturbed and deciduous trees and shrubs are dormant during this period. Cutting back hard is not a problem - it will encourage the hedge to thicken.

Support reforestation with native species

Native restoration involves restoring ecosystems to their natural state by reintroducing native plant and animal species whilst removing invasive species and restoring natural waterways. By restoring ecosystems to their natural state, we can help to mitigate the effects of climate change, protect endangered species, and ensure that our campuses contribute to a thriving natural environment.

A recent review led by Kew scientists and Botanic Gardens Conservation International (BGCI) proposes 'ten golden rules for reforestation' to boost benefits for people and the planet. Check these out before you do any reforestation:

1. Protect existing forest first
2. Work with local people
3. Maximize biodiversity recovery to meet multiple goals
4. Select the right area for reforestation
5. Use natural forest restoration wherever possible
6. Select tree species that maximise biodiversity
7. Use resilient tree species that can adapt to a changing climate
8. Plan ahead
9. Learn by doing
10. Make it pay

Support reforestation with native species

Some reforestation efforts involving students in the NPU network include:

Plantar o Futuro, Aveiro

Organized by Agora Aveiro in collaboration with the Group for Sustainability of the University of Aveiro and the Municipality of Estarreja, "Planting the Future" represents a movement for the defense and promotion of the autochthonous forest and its value in mitigating climate change, resilience against fires and biodiversity conservation.

Credit: Agora Aveiro

Credit: Familial Forestry

Familial Forestry, Bikaner

Founded by Shyam Sunder Jyani at Government Dungar College, Bikaner, Rajasthan, the project involves nutritional gardens, institutional forests, and sapling nurseries. The philosophy of Familial Forestry involves individuals and communities treating trees as part of their families, taking ownership of the green spaces around them, promoting a sense of environmental responsibility and enhancing the urban forest ecosystem. The inclusion of fruit-bearing trees and plants can provide not only nutritional and biodiversity benefits but also economic benefits for the community through the sale of excess produce.

Support reforestation with native species

Some reforestation efforts involving students in the NPU network include:

Miyawaki forest, Lahore

Students joined their university's efforts establishing a Miyawaki forest on campus at Government College University Lahore. Saplings for a Miyawaki forest are planted at high density with native species to ensure fast establishment mimicking natural processes. These can provide pockets of rich biodiversity inside otherwise urban areas.

Credit: Government College University Lahore

Credit: Baker College for Women

Native species planted at Kottayam, India

Students joined staff to celebrate World Environment day 2023 by planting local varieties including papaya, pepper, mango and guava at Baker College for Women, Kottayam, India with the aim of conserving nature and serving humanity.

1 Explore possible actions using the Conservation Hierarchy

Using the below table as a guide (or in your own format / design), consider a range of actions that could be taken at your university at different steps of the Conservation Hierarchy.

REFRAIN	
REDUCE	
RESTORE	
RENEW	

2 Plan biodiversity actions

As a Nature Positive Student Ambassador, we want you to help make Nature Positive change in your university. The actions in our toolkits are designed to provide inspiration for what you might like to do in your role, but we encourage you to take the approach that you think will work best.

There is no minimum/maximum number of actions to be taken, depends on time, resources and interest etc. We hope the actions and case studies featured, and links on the following page will give you ideas and tips for actions that could be taken in your setting.

You might want to think through practical steps towards taking action on your campus:

What you want to do or work towards?

Who you might need to work with or get permission from?

When is a reasonable timeframe to achieve this action?

How you will carry this out and which resources you would need?

Further guidance and information:

- Explore Case Studies on the NPU website

- Watch Webinar 3 in the NPU series from 2024, which features speakers from Government Dungar College, Bikaner, India and University of Konstanz, Germany

- Watch back some of the presentations given at Student Ambassador workshops back in 2023 and 2024:

1. How to utilise graphic design for effective communication
2. How to start an environmental campaign
3. Preserving indigenous plant knowledge
4. Top tips for project management
5. The importance of planting native and climate sensitive flora