

Canyon Connection: Backyard Biodiversity Pilot FAQ

What is the Canyon Connection: Backyard Biodiversity Pilot?

You may think scientists know it all, but when it comes to canyons and our urban spaces close to canyons, there is still much to discover. The Canyon Connection: Backyard Biodiversity Pilot is an initial step to better understand the plants and animals that call San Diego's backyards and canyons home.

San Diego is home to more than 150 canyons. These special spaces provide important benefits for people, plants, and animals. In fact, our canyons are home to 85 rare, threatened, and endangered species. Canyons absorb and filter stormwater run-off, naturally combatting flooding and pollution and their natural landscapes help buffer higher temperatures common in developed areas. They serve as important wildlife corridors for animals to safely move throughout urban spaces they would not otherwise be able to traverse. And, they provide much needed recreational space.

Thanks to its urban canyons, 81% of San Diego's 1.4 million residents live within a 10-minute walk of a park or green space. As the population has grown, and flat land has been increasingly developed, these steep, difficult-to-build-on places are often left untouched. This means in many urban areas, canyons survive as the only green spaces, and are home to many things that humans, plants, and animals depend on for a healthy environment.

Unfortunately, canyons are threatened by continued development, pollution, invasive species, and more. We want to better understand how we can help protect these special spaces and ensure their unique benefits remain accessible to our communities for generations to come.

How does this project work?

In order to better understand the wildlife of our canyons, we first need to know which wild plants and animals are found in local yards and canyons. To do this we will use a number of different tools and methods, Malaise and Blue Vane traps for catching insects, acoustic bird monitors to record and identify birds present in the area, as well as iNaturalist observations to document plants and animals not captured by the traps and monitors in use.

Museum representatives will visit your home to install traps. All homes will receive a Malaise trap and a Blue Vane trap for collecting insects. Depending on location and project needs, some homes will also receive an Acoustic Bird Monitor and/or an Environmental Monitor.

How long will the pilot run?

This project is the first of its kind run in San Diego and certain aspects have yet to be tested. While this may sound daunting, we see it as an exciting opportunity to test and refine all aspects of this project, from the equipment used to the project timeline. It requires we remain

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agile and ready to make updates throughout the life of the project. We welcome your insights and will use them to improve the project for everyone. The initial project will run June 2021 through August 2021 with the possibility of extending through November 2021.

We will have a feedback survey at the end of our pilot project, however you can share feedback any time by emailing Project Manager Emily Blanchard at EBlanchard@sdnhm.org.

What do I need to do to the Malaise Trap?

Malaise traps are large, tent-like traps designed to trap flying insects. They will remain set-up in your yard throughout the course of the project. You will need to **install and remove the collection bottle once each month** on predetermined dates (details on instruction sheet). Installation requires screwing a collection bottle onto the trap. Removal requires unscrewing the bottle and capping it shut with the lid provided. We will email you a schedule and reminders as dates approach. We will collect used bottles once every month.

We recommend wearing gloves when handling the collection bottles. **Collection bottles will be prefilled with ethanol (alcohol). A liquid similar to rubbing alcohol. Humans and animals should not ingest and should avoid contact with skin, eyes and mouth.**

Malaise traps must always be secured in place; strong gusts of wind could potentially move them if not secured. We have modified the traps so they can be moved if necessary. Ideally this will only be done when the trap is not actively collecting. Before you move the trap, please inform Project Coordinator Emily Blanchard at EBlanchard@sdnhm.org. You will need to remove the four stakes securing the trap to the ground and find a new location where it can be staked to the ground.

What do I need to do to the Blue Vane Trap?

Blue Vane traps are designed to attract some pollinating insects (bees, wasps and flies) using color. The insects fly towards the blue and yellow coloring and into the trap, where they are captured in Propylene glycol*. Blue Vane traps will collect during the same predetermined week as the Malaise trap, once a month. At the end of the week, **you will seal it with the provided lid** (details on instruction sheet). Nat staff will retrieve the trap once a month, at the same time when they retrieve the Malaise trap bottles. Blue Vane traps hang from hooks secured to the ground. As long as the trap is sealed and not collecting, it can be moved to a secure location. We recommend using gloves when sealing and if moving trap.

***Propylene glycol is an alcohol and synthetic food additive. Humans and animals should not ingest and should avoid contact with skin, eyes and mouth.**

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What do I need to do if you install an Acoustic Bird Monitor?

Acoustic Bird Monitors record bird vocalizations. They help us document bird species utilizing backyard spaces and compare them to birds in canyon spaces. These monitors automatically turn on and off. They record for 15 minutes each day, five minutes at dawn, dusk and after midnight. We will remove them after three to seven days. We will schedule a pick-up date with you in advance. **You should not need to do anything to them** (details on instruction sheet). In fact, these monitors are quite sensitive. As such we ask that you do not touch them, or move them from their installation spot.

What do I need to do if you install an Environmental Monitor?

The environmental monitor helps us note weather conditions, light levels as well as record various gases in the air. **We ask that you monitor the battery's life and charge it once a month until fully charged** (details on instruction sheet). You will know charging is complete when all four charging lights are active on the battery. This should take two to three hours at most. Ideally, this will be when you change out the bottle on the Malaise insect trap. If you're interested, we can help you hook the monitor up to Wi-Fi and view real time data results. Monitors will be housed in a water-proof container and secured to a stake. Monitors should remain outside in the same location for the duration of the project.

How do I use iNaturalist?

iNaturalist (iNat) is a website ([iNaturalist.org](https://www.inaturalist.org)) and a smart-device application (app) that identifies and documents plant and animals. Similar to email it requires that you create an account. Once you have an account, you can sign on and access your account from any device with internet access. We will provide a guide to getting started. There are also many helpful tutorials as well as a forum available online to help you trouble shoot. You can also reach out to Community Engagement Manager Lauren Marino Perez at LMPerez@sdnhm.org.

We will show you how to do an initial photographic survey of the plants in your yard when we come to install your Malaise trap. Then we ask that at least once a month, ideally when you cap the Malaise trap collection bottle, you set a timer for five minutes and make iNaturalist observations of any wild plants or animals you have yet to make iNaturalist observations of in your yard.

iNaturalist Tutorials, <https://www.inaturalist.org/pages/video+tutorials>

iNaturalist Forum, <https://forum.inaturalist.org/>

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How do we capture the insects?

We use a collecting tool called a Malaise trap to capture insects. The trap is named after Rene Malaise, a Swedish entomologist who observed insects gathering in his camping tent after he accidentally left the flap open. The Malaise trap is a passive trap; it does not attract insects with a scent, color, or bait. The insects just happen to fly in and try to escape by flying up to the apex of the trap where they gather into a jar of ethanol (alcohol) preservative.

Why do we capture insects?

The vast majority of insects are too small for us to study without the aid of equipment that magnifies them, such as a microscope. Preserving insects allows us to study the internal and external physical features of the insect, as well as analyze its DNA to understand evolutionary relationships. We collect these insects for scientific understanding and we keep them safe in our collection room which houses over 1 million specimens. Scientists from all over the world use these precious specimens to gain a better understanding of insect diversity.

See examples of how understanding evolutionary relationships helps us all in practical ways. Visit, https://evolution.berkeley.edu/evolibrary/article/0_0_0/evotrees_treesmatter_01

Does collecting insects for science threaten their populations in the wild?

Insect populations are very large and insects typically live a short time. Collecting insects is not a conservation concern. The main cause of population decline in insects is habitat loss.

How do we preserve the insects?

The first step of preservation is to collect and keep the insects in 95% ethanol (also referred to as alcohol). The ethanol prevents the insect body from decaying, as no bacteria can survive in it. Ethanol also preserves the insect at the cellular level, allowing future analysis of the specimen's DNA. Many of the insects from your yard will remain part of the Museum's Entomology collection for generations to come.

Unexpected Circumstances:

What do I do if something happens to one of the traps or monitors?

Accidents happen. We're here to help. Should something unexpected occur please contact Project Coordinator Emily Blanchard at (---) *Cell Phone Number*. If possible, include a picture of what you are referencing. You can also email Emily at EBlanchard@sdnhm.org, however please allow a few days response time for emails.

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