

Ferris





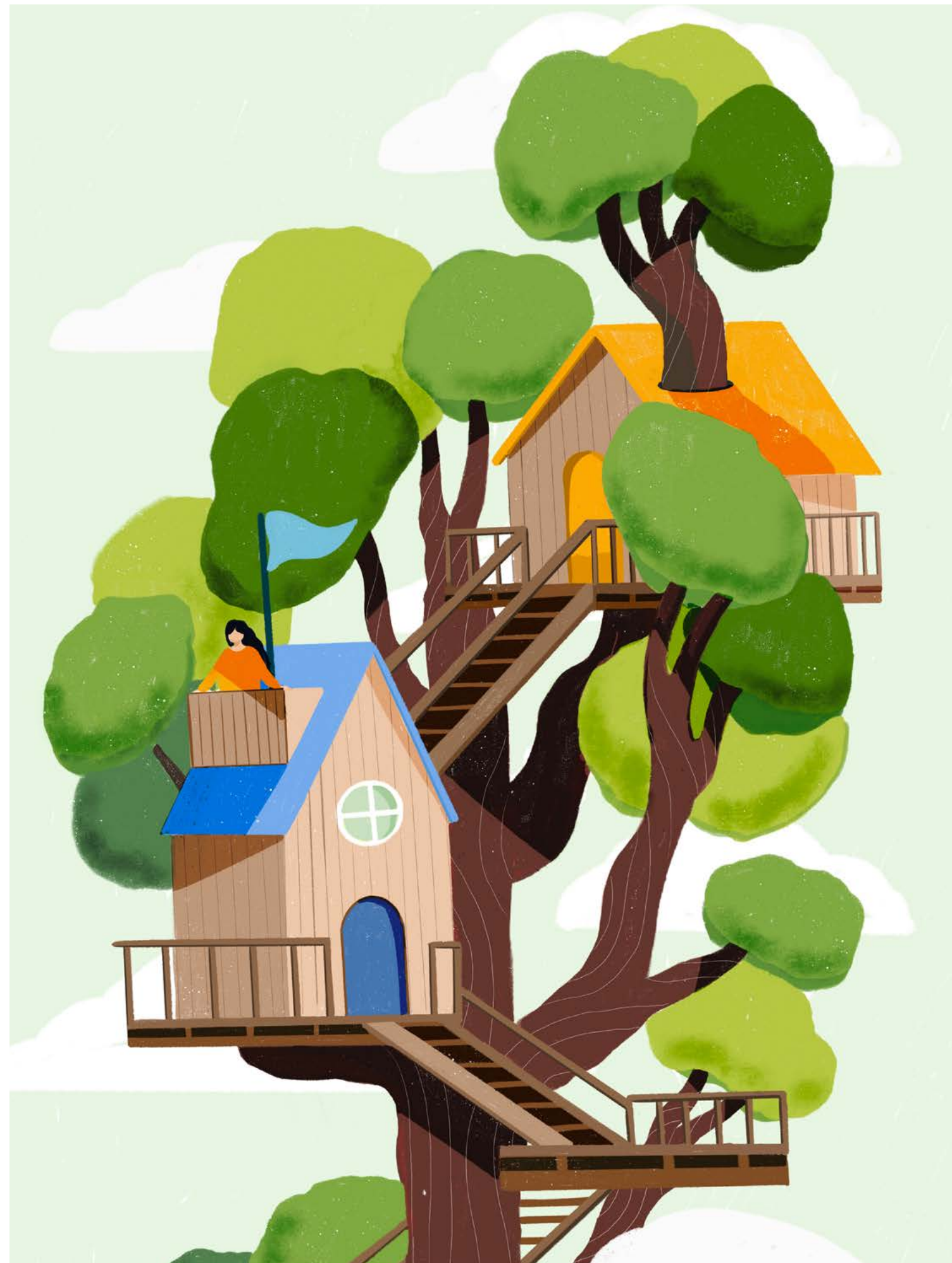
BLOOM

“When I am among the trees,
especially the willows and the honey
locust, equally the beech, the oaks, and
the pines, they give off such hints of
gladness. I would almost say that they
save me, and daily.”

—Mary Oliver

We wanted to celebrate the feeling that spring evokes - a feeling of awe and wonder. Each year it arrives, beckoning us outside to explore and discover what it has to offer. Spring shows us that there is always something to look forward to even during the darkest months.

Words by Alanna Burns
Illustrations by Jaclyn Simon



Escape to Green Space

“Like many people, a significant portion of my time is spent indoors, usually at a desk. It takes effort to go outside to spend time getting back in touch with nature, but it’s an effort well worth it. The effects of spending time outdoors provides tremendous improvements to my mental health. Feeling the warm sun on my face and the tranquility that comes with being among plants can eradicate the worst of moods.”

As a person who lives in a city, I frequently find myself seeking places to visit that counteract the effects urban living can have on my well-being. Spending time in places like a park or community garden grants a reprieve from what can often be a daily routine that doesn’t involve much time with nature. Like many people, a significant portion of my time is spent indoors, usually at a desk. It takes effort to go outside to spend time getting back in touch with nature, but it’s an effort well worth it. The effects of spending time outdoors provides tremendous improvements to my mental health. Feeling the warm sun on my face and the tranquillity that comes with being among plants can eradicate the worst of moods.

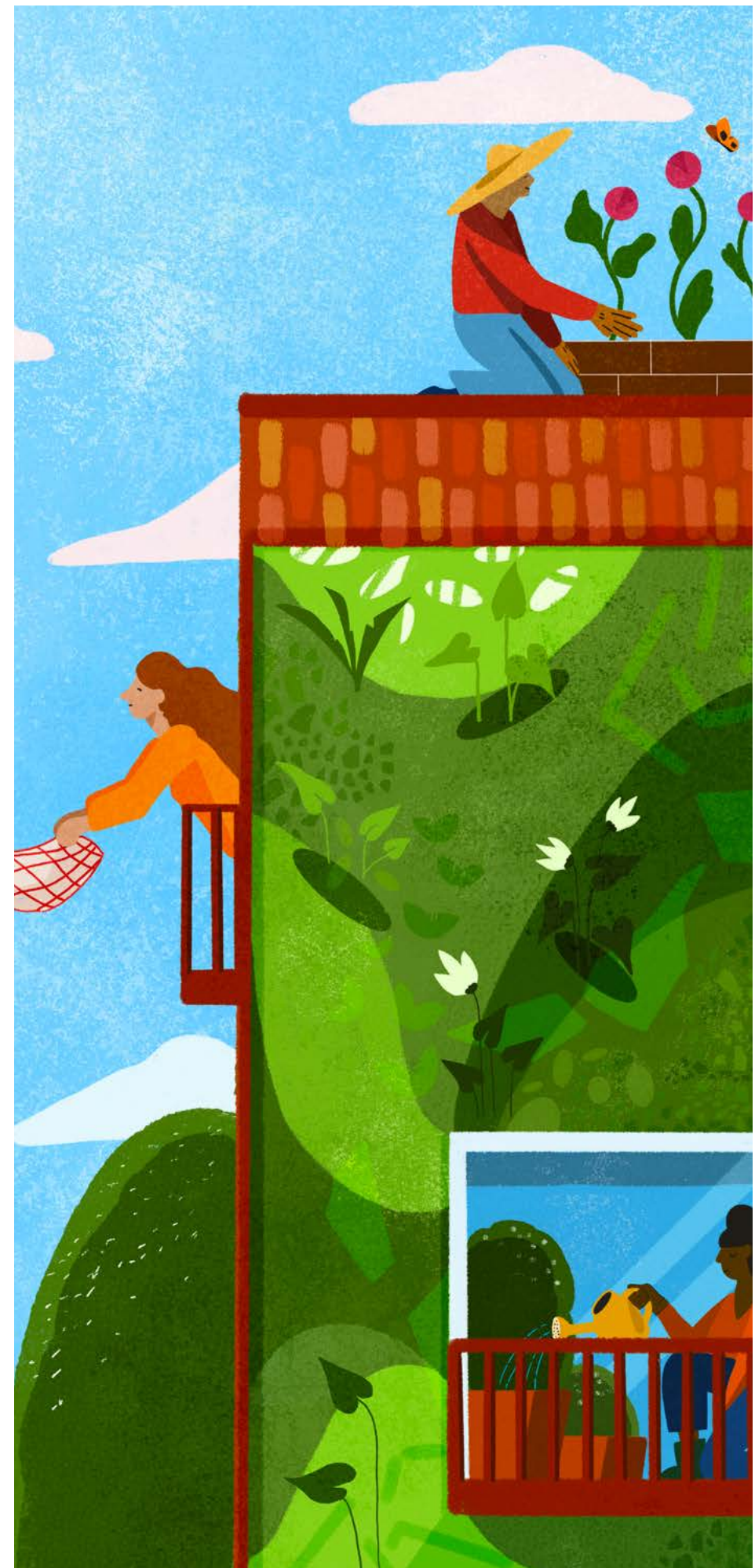
Despite having lived in a city for many years now, I’m not really a big city person. Sure, I love the convenience that city life offers and there are countless amenities available to me, but I often find that living in a city can feel overwhelming and even claustrophobic. I am constantly aware of being surrounded by steel and glass and the constant drone of traffic and city noise can be a little much. It’s loud and busy and quite frankly, it’s a lot for our brains to process. Cities have their benefits for sure, but they also have their drawbacks. A disconnect from nature is an unfortunate reality of city dwelling. component of successful city planning. It is vital that cities provide these spaces for its inhabitants as a way to escape

city life and have a safe space to spend time with nature.

There are at least three parks within walking distance to my home. At any time, I can just go outside and sit in a park and begin to feel the positive effects that being outside has on the human body. I instantly feel better about whatever might be bothering me and I often find that I have my most creative thoughts while sitting on a bench in a garden. Sometimes it’s just walking around my neighbourhood and sitting at a park for a bit. Other times it’s a hike through the forest, spending time amongst the spaces - no time trees - trees make lovely company. I’ve realised that it doesn’t matter how I spend my time outside in these spent outside is ever wasted. I never regret going for a walk or visiting a garden. The benefits are that good. I am grateful for having access to these safe spaces throughout the city, but for many people, that access is limited. I strongly believe that everyone should have access to a variety of green spaces and to be able to spend time in nature, regardless of where they live. Green space is important for those who live in an urban environment. Not only do these spaces provide a place for respite and socialisation, but they also contribute to better air quality and a decrease in noise pollution. The exposure to beneficial microbiota (microorganisms found on all multicellular organisms, like plants!) helps improve our immune function. These spaces also help in our fight against climate change. Parks and community gardens are good at sequestering carbon

in the soil and promote urban biodiversity. Parks and urban forests can provide shade relief for those in increasingly warmer months. In areas where there isn’t much of a tree canopy, this can actually help save lives. Our mental health benefits from these spaces as well. Mood disorders like depression and anxiety benefit from exposure to nature. Science tells us that the more time you spend in nature, the better you feel. City living can be stressful and can potentially lead to the development of psychiatric conditions. Urban parks and gardens help combat this by giving us a place to go when life feels overwhelming.

Unfortunately, despite how critical green spaces are to an urban environment, cities across Canada have been losing green space over the years. This is mostly due to development. Cities need to be creative in how they can provide housing density but also space for trees. Without adequate green space, cities cannot function properly. We need these areas in order to live healthy, fulfilling lives while dealing with the realities of city life. I will never tire of visiting the green spaces in my neighbourhood. I love walking to the park and seeing the community garden full of plants knowing that people are putting their time and energy into maintaining something beautiful, not just for their own enjoyment but for the enjoyment of others. These parks and gardens provide an outlet for people to experience joy and peace and find a sense of calm in a world that demands so much of our time and attention. When we need to disconnect and turn our attention inwards, the value of green space really shines. We may not all be able to escape city life on a permanent basis, but at the very least we can temporarily escape to a place where it doesn’t all seem so bad.



Can You Grow Potatoes on Mars?

IF you have read or have watched *The Martian*, you may remember how the protagonist, Mark Watney, grew potatoes on Mars by mixing martian soil with freeze-dried poop. Sure, it's a fun bit of fiction and given that Watney is a botanist, a great way to try and feed himself while he's stranded on Mars. I have often wondered, would that even be possible? Could you grow potatoes on Mars?

I am fascinated by space exploration and the many different ways we've advanced as a species. We're not about to be visited by Vulcans anytime soon (Trekkies will know) but we've come a long way since those early space faring missions. You know what's also cool? Botany. Botany has also come a long way and botanists continue to discover ways to help us survive on Earth. Botanists are an incredibly important part of our fight against climate change and its effects on our plant life and biodiversity. Without plants, we would simply not be able to survive.

Let's go back to Mars potatoes. Could it be done? I am by no means important enough to reach out to a scientist at NASA to answer that question for me, so I had to settle for the good old Internet to satisfy my curiosity. I found some interesting bits of information that mostly answered my question.

Short answer, no, you most likely wouldn't be able to grow potatoes on Mars like Mark Watney (bummer). There are so many factors involved, microbes, soil etc. that to get a yield like he did (a very good first crop indeed) would be an incredible feat. Gotta love fiction! But some of what he did was fairly accurate in its science. Regolith, aka Martian soil, the stuff Watney used to grow his potatoes in, is actually quite low in key plant nutrients. It's also pretty terrible at absorbing water and is often contaminated with heavy metals or toxic compounds. Not the best environment for growing plants.

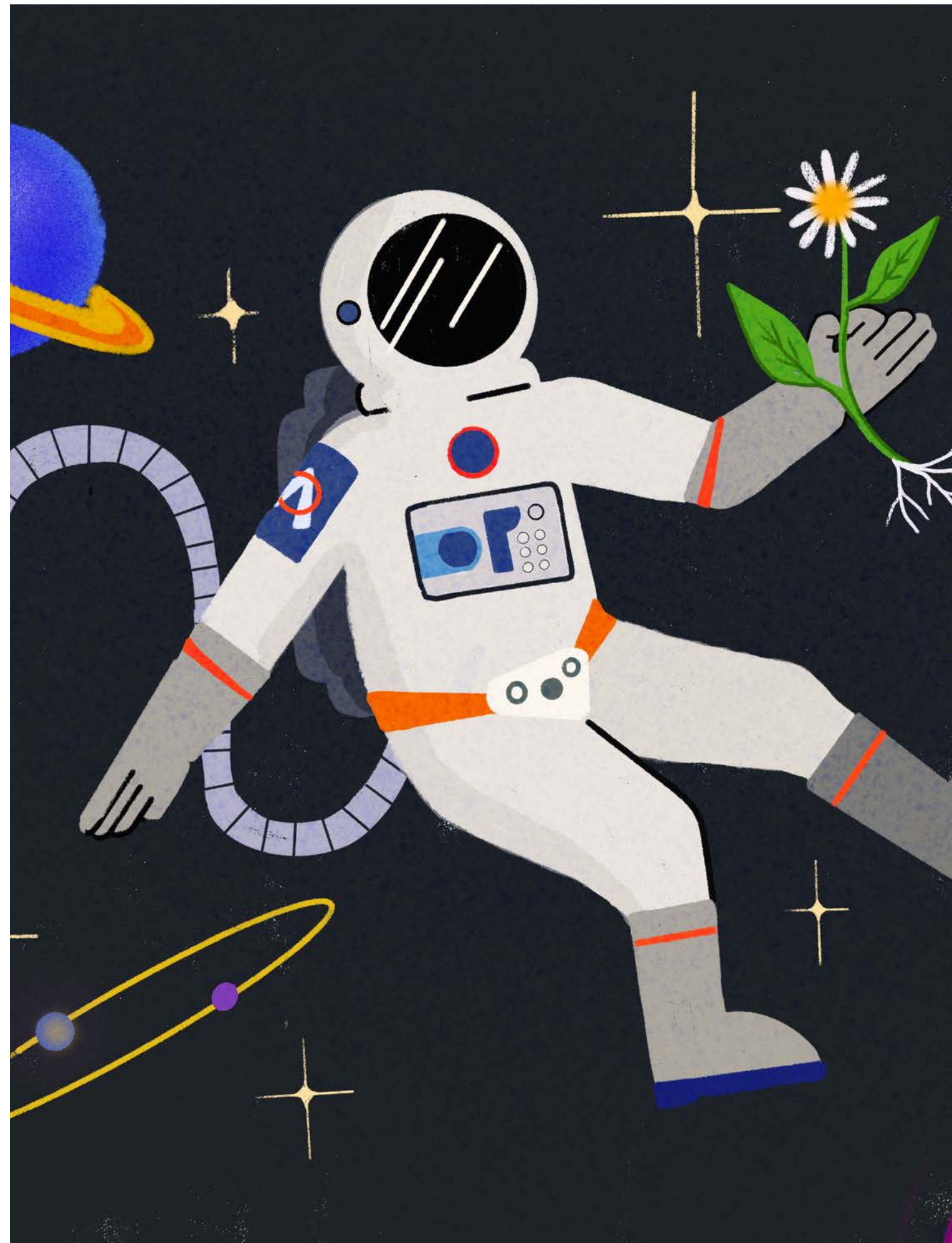
It's not all fiction though. Scientists are hard at work trying to find ways to successfully grow plants in space. Environments are created on Earth to mimic atmospheric conditions you would find on the moon or Mars and then once the plants have grown, they are studied by scientists at length to learn as much as

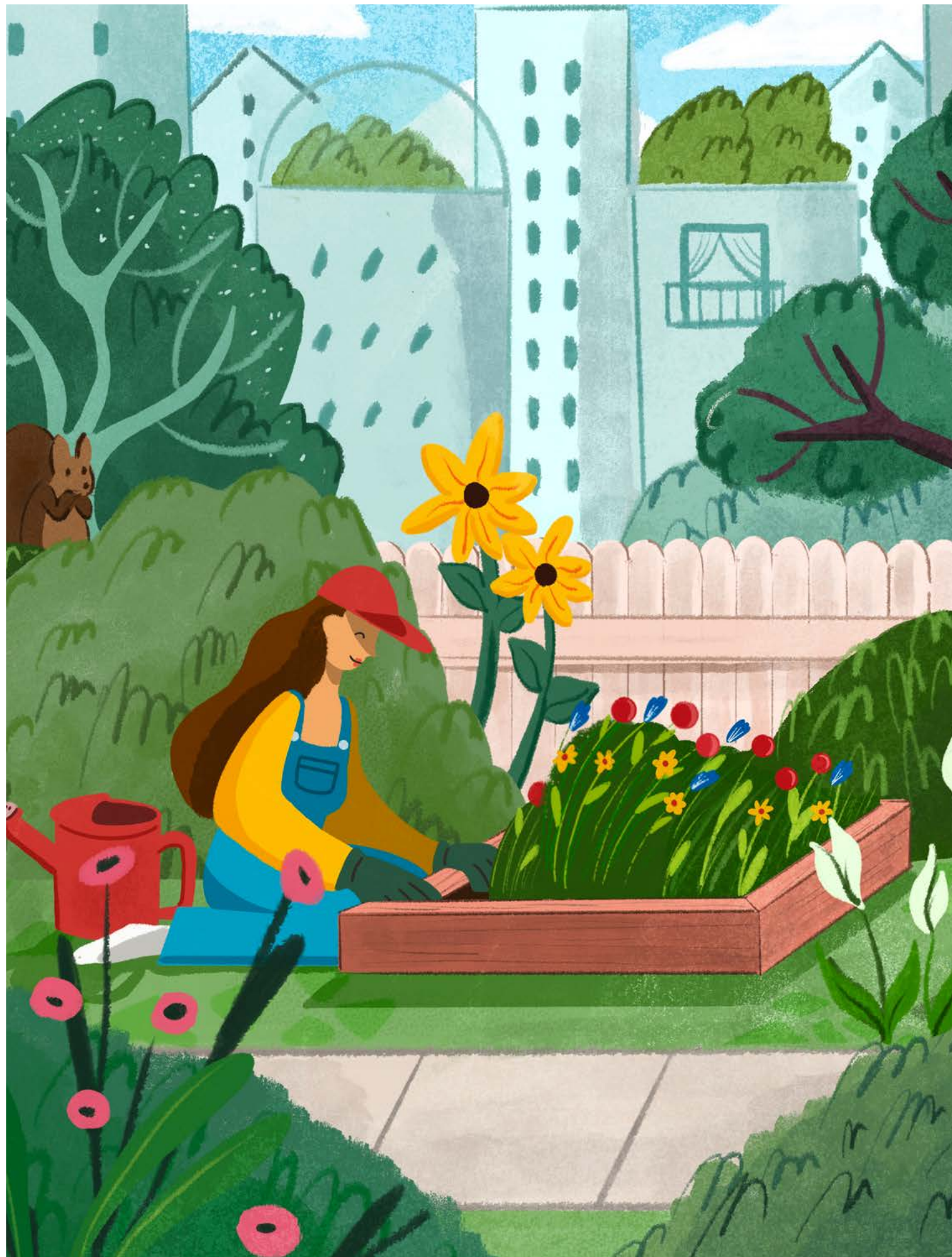
possible about growing plants in space.

Why should we care about being able to grow plants in space? If humans want to continue to explore space and even one day inhabit places like the moon or Mars, it's important that we have a sustainable source of food. So while *The Martian* is fiction - it could very well be a reality in the future. Over at NASA, they've created the Vegetable Production System, also known as Veggie. Veggie is a space garden that currently resides on the International Space Station (ISS) and it allows astronauts to study plant growth in microgravity. The plants grown are also consumed by the astronauts, adding valuable nutrients to their diets. To combat the effects of space on the plants itself, each plant grows in a "pillow" in the garden, which is described by NASA as being the size of a piece of carry-on luggage. The "pillow" is filled with a clay-based growth media and fertilizer, and aids in the distribution of water, nutrients and air around the root system. Neat!

Another system, called the Advanced Plant Habitat, or APH, is also used on the ISS but it is used solely for plant research and is completely enclosed and automated, being controlled by a team back on Earth. Both systems, Veggie and APH, use LED lights to grow the plants to great success. These LED lights are designed to mimic natural sunlight, an important part of growing plants, but lacking in a space environment. When the plants are fully grown and ready for harvest, the crew aboard the space station collects the samples and sends them back to Earth for the team to study further. Scientists want to know how space affects their growth and development, with a specific focus on what changes happen at the gene, protein, and metabolite levels and why these changes occur.

There have been so many advances in the study of plants in space over the years, which makes it feel like we're moving out of the world of fiction and into reality. Plants are important on Earth, but can also have a big role in space exploration. All of the studies being completed by NASA and its scientists are designed to help us understand how space affects plants and how we can eventually grow them in space like Mark Watney. Science is cool.





Gardening Against the Rules

Many people don't notice or recognize areas in their community that could benefit from more plant life. I'll be honest, I used to be like that. I never used to give much thought to the state of the dirt patches along the side of the road or the abandoned lots in our neighbourhood. It took me becoming interested in plants and gardening to then realise that my passion didn't have to stop in my own home. I began to notice things like unsustainable planting in my community and the lack of functional green space and I wondered what could be done to change that. I heard about "Guerilla Gardening" and was immediately intrigued.

The definition of Guerilla Gardening is "the act of gardening - raising food, plants, or flowers - on land that the gardeners do not have the legal right to cultivate, such as abandoned sites, areas that are not being cared for, or private property." While it may be illegal to cultivate land you don't own, it hasn't stopped people from planting flowers and edible plants in areas that have been neglected or abandoned in an attempt to breathe life back into these parts of their communities. The term "guerilla gardening" was coined by Liz Christy in 1973 when her Green Guerrilla group turned a derelict private lot into a garden. This garden, which is now known as the Liz Christy Bowery Houston Garden is New York's first and oldest community garden and is still cared for today by volunteer gardeners and is protected by the city's parks department.

The Green Guerilla group saw vacant lots as community gardens and sought to improve upon their communities in what has been described as a "form of civil disobedience" by member Amos Taylor. They believed that community gardens could be used as a tool to "reclaim urban land, stabilise city blocks, and get people working together to solve problems." Community gardens make a positive contribution to a neighbourhood. People can grow food and spend time reconnecting with the earth. During hot days,

it's a place to cool off. New York in the seventies was a pretty bleak place. Since the first community garden was built, there has been a successful campaign in building more and there are now over 600 community gardens spread throughout New York. These gardens are a true testament to the early work of a determined few.

A byproduct of the Guerilla Gardening movement is urban farming. Access to gardens and fresh food is a luxury afforded by a select few. This lack of access is referred to as a food desert - an area that has limited access to affordable and nutritious food. One of the largest food deserts in the United States is South Central, Los Angeles, California. In 2010, Ron Finley, a resident of South Central, began a horticultural revolution by petitioning against the city when he was cited for planting vegetables in dirt patches throughout his neighbourhood. Since then, the Ron Finley Project has helped communities turn neglected lots into thriving food gardens that serve those in need. Access to affordable and nutritious food is a problem that affects millions of people worldwide. Allowing people to grow their own food is one way to combat this issue, but it's merely a small part of a much larger problem.

You don't need to do much to make a difference in your community. Small acts can have big impacts and even the smallest of contributions can help make a change. You can spread native wildflower seeds around your neighbourhood to help local pollinators (and make people smile, because they're pretty) or you can volunteer for a local group that raises awareness about the lack of community gardens and access to food in lower income communities. Community gardens are typically managed by volunteer groups, and they play an important role in their contribution to green space in urban areas. No matter how we contribute to bettering our communities and neighbourhoods, the outcome is one that can have lasting impacts for generations to come.

My Fascination with the World's Second Largest Rodent

My first beaver encounter happened nearly three years ago. I was standing on a foot bridge overlooking the duck pond at Jericho Beach Park, when I saw its head break the water as it swam towards me. Surprisingly elegant and larger than I thought it would be, it swam under the bridge below my feet and left me speechless in its wake. It was a summer evening, just before the sun set, and I can remember watching the swallows and bats fly around catching insects. I can remember the smell of barbeque from the beachgoers just a few metres away. All the sights and sounds you would expect at a beach in the summer. It was a moment I'll never forget, made all the more special by the visit from what I now consider the world's coolest rodent.

A little bit about Jericho Beach Park before we move

on. The pond at the park was created in a naturally marshy area. Three creeks fed into the area, and it was surrounded by some of the largest conifers in the region at the time. The pond and surrounding habitat has changed significantly over the years, thanks in large part to the volunteers who regularly remove invasive plant species and help maintain the natural environment as best as they can. In 2004, the Jericho Stewardship Group was formed and the group remains active to this day. The park is considered one of the best places for birding in the Vancouver area and over 200 species of birds have been recorded throughout the year. In fact, the shoreline near Jericho Beach Park is a designated bird area (IBA). I always knew that the park was a special place and unique to the area. When you visit, you feel transported and it's easy to lose yourself in the surrounding wildlife.



There is an abundance of life all around, and it's one of my favourite places to visit in the city. It was a most pleasant surprise to discover that beavers also inhabited the pond. It took years of visits to finally see them and what a discovery it was!

In all my visits, I had never seen them before. That night when I first saw the beaver, it felt like it was showing up just for me. I stood on that bridge until it was dark, watching it swim around collecting branches to bring back to its lodge, which turned out to be hidden in plain sight! Later that summer I would see it again, along with other members of its brood. In the spring I would see the kits (baby beavers!) swim around exploring their home and following their parents around. My curiosity about the beavers would bring me back to the pond time and time again to visit them and watch (from a respectful distance of course!) as they went about their lives. I'd watch as they munched on small trees near the shore and repaired their lodge. I also watched as other park goers walked by without even realising they were in the presence of one of the most important animals to our ecosystem.

If you are not sure what a beaver is, let me tell you. Beavers are the second largest living rodent species after capybaras and are found in the Northern Hemisphere. There are only two species of beaver - the North American Beaver (*Castor canadensis*) and the Eurasian beaver (*Castor fiber*). My local beavers are North American beavers. Beavers require fresh water and find habitats in lakes, rivers, streams and ponds. They are herbivores, their diet consisting of tree bark, aquatic plants, and grasses. Beavers are nature's engineers. They build dams and lodges, creating wetlands used by countless other species. Their infrastructure is a vital part of our ecosystem and because of this, they are what is referred to as a "keystone species." A keystone species by definition are "those which have an extremely high impact on a particular ecosystem relative to its population." A keystone species can be an animal, plant or microorganism. These ecosystems, without their keystone species, would cease to exist.

Beavers are fascinating, important creatures. Sadly, they weren't always recognized as such. Historically, they were hunted to near extinction for their fur, meat, and castoreum and in a modern world where humans continue to encroach on their natural habitats, they are often considered a nuisance when in reality they are more important than most people realise.

While tricky at times, humans and beavers can coexist peacefully, but it involves a lot of effort. Beavers, if left to their own devices, can quite literally change the landscape they inhabit. A wetland can be created virtually overnight, and if this occurs in an area close to the human population it can wreak havoc on our infrastructure. Fortunately, in some cities, people have finally realised that beavers aren't the bad guy. Technology has been developed to allow beavers to leave near populated areas without people even realising.

For example, the airport in Vancouver is built on a wetland. The airport is located on Sea Island, which is also home to a nature conservation area. Beavers also call Sea Island home, but to allow the relationship between people and beaver to remain on good terms, a piece of technology called a Beaver Baffler (one of many names), allows people to control the level of the water where the beaver lives, without the beaver realising. This means that the beavers can live undisturbed, despite being so close to a runway that they could easily flood if left alone to their own devices. The culver that the beavers call home is a lush, thriving ecosystem, home to many other species. A benefit that greatly outweighs the cost of finding a solution to being able to cohabit peacefully with one another.

A pair of beavers were also reintroduced to a pond in Olympic Village, located in the middle of a busy area of Vancouver where people live, work, and enjoy the nearby sea wall. These beavers are beloved by the community. They're able to live peacefully in such a busy area, largely due to the technology that allows humans to monitor and control the water levels to avoid flooding. The pond they inhabit is a beautiful, peaceful place and home to many other species. It's a thriving ecosystem, most likely unattainable in that area without the beavers.

Ever since that night when I saw my first beaver, I have developed a fascination with them. I love animals and I love to learn about them. I thought I knew beavers, but after spending time researching more about them, I realised I knew very little. There is still so much to discover and I hope that I'm able to spend more time with them. I find myself wanting to talk about beavers with everyone and share my knowledge with them. It's joyful to learn about something that interests you for no other reason than it's just fun to learn. My experience has inspired me to take a more active role in protecting beavers and the habitats in our city that support them.

The Great (Virtual) Outdoors

I think we can all agree that reality is a bit much sometimes. When I feel like taking a step back and escaping from the real world, I turn to my books, finding comfort in the world of fiction. When I need something a little more interactive, I play video games.

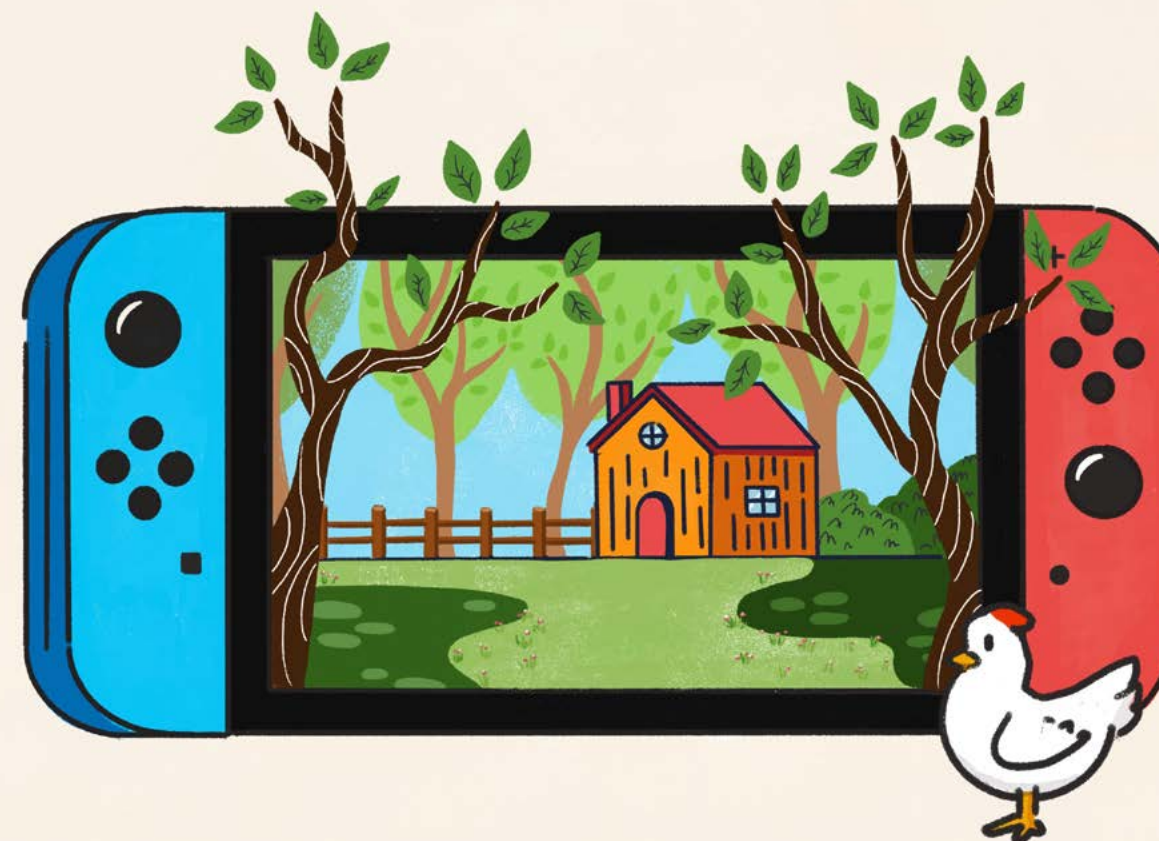
When I was younger, I found joy in competing against my siblings in Mario Kart 64 and trying to save Princess Zelda in The Legend of Zelda: Ocarina of Time. Nintendo's N64 was a big part of my childhood, and it was a fun way to spend time with my brother and sister and our friends. Like a lot of people my age, we remember when the N64 was first released and how incredible it was to play a game in 3D. It was my first experience feeling immersed in a digital world. Who can forget playing as Mario triple jumping your way through the Mushroom Kingdom or riding Epona through Hyrule Field? Video games are a good time, but they offer so much more than just mindless entertainment. It took me until I was an adult to get back into gaming. I was given a Nintendo Switch from my husband and despite it being years since I had picked up a controller, when I began playing The Legend of Zelda: Breath of the Wild (now one of my favourite games of all time), I was immediately hooked. I felt the same sense of awe and fascination that I felt when I first played Ocarina of Time. The world was captivating and I was having So. Much. Fun. It was a beautiful gift to my inner child and one that I continue to give to this day.

Zelda's Breath of Wild reintroduced me to a world I didn't realise that I had missed. There have been numerous Zelda games released since my experience with Ocarina of Time, but Breath of the Wild was the first of the series in which the world completely captivated me. Exploration was encouraged and the world was designed to evoke a sense of curiosity and adventure. Not to mention, the Hyrule of Breath of the Wild is beautiful. The art style of the game really made me feel calm and relaxed but also made me feel like going on an adventure. Nature plays a very important role in Zelda, but also in many other video games. Flora and fauna not only contribute to the overall world design, but to how games make us

feel as players. Games, like books and other media, should make you feel something.

I am drawn to video games that incorporate nature into the gameplay in some capacity. I want to play games that are beautifully designed and evoke a sense of exploration. Games like Breath of the Wild, Stardew Valley, Animal Crossing: New Horizons, and Alba: A Wildlife Adventure are all games that I've played where nature is a big component. Studies have shown that just looking at photographs of nature lowers your stress levels and makes you feel happier, so it shouldn't come as a surprise that observing nature in video games has the same effect. I am drawn to "cosy" games when I feel stressed or when my anxiety is wreaking havoc on my nervous system. I notice that while playing I feel significantly less stressed and am able to disconnect from the real world for a bit - which is important to do occasionally. I feel the same way when I read certain novels. I love the feeling of getting swept up in a story and losing yourself in a different world. I am drawn to nature for many reasons, but a big one is that when I reconnect with nature, I am reminded that I am merely one small part of a much bigger picture and it gives me a sense of perspective that eases my anxieties. It's no wonder that I seek this feeling in the media that I consume.

The game Stardew Valley, in my opinion, is a crowning achievement. Developed by one person (Eric "ConcernedApe" Barone), it's a game full of colourful characters and takes you on a journey that starts you off learning how to run a farm that you've inherited from your grandfather. If you've ever had the fantasy of ditching your hectic, stress-inducing city lifestyle and retreating to the countryside, this game delivers on all fronts. What I love most about Stardew Valley is the feeling that there is something to be discovered around every corner. Running a farm is more fun than it sounds, and you have to grow a variety of different crops based on the season all while taking care of your cows and chickens. Your character spends a lot of time running around, collecting items and getting to know the locals, but the best part is just exploring the world and enjoying the changing seasons (and excellent soundtrack). I have no desire to be a farmer in real life, but I get to act the part in Stardew Valley and it's pure perfection.



Alba: A Wildlife Adventure - a small indie game, is a great example of video games that can be used to educate the player on real-world issues. You play as a young girl (Alba) visiting her grandparents who live on a small island in the Mediterranean. While visiting, you find out that the local nature reserve is being threatened by a developer (a story familiar to everyone!). Your job? Save the nature reserve! Alba embarks on a delightful adventure, recording her observations of the local wildlife and helping clean up the island. You learn about the importance of preserving areas like nature reserves and how small actions can have big impacts on the environment. I found myself completely engrossed in the story but it also appealed to the naturalist in me and got me thinking about conservation in the real world. I thought that the game did a really good job at educating the player while also engaging them in a fun and playful story inspired by a real-world subject. It's the ultimate nature game.

While others were busy baking sourdough during the pandemic, I was busy terraforming and collecting bugs and fish on my island in Animal Crossing: New Horizons (ACNH). Nintendo released ACNH the week

the lockdown started and it could not have come out at a better time. What started as a cute game I started to kill time and feel less depressed about the state of the world, turned into one of my favourite gaming experiences of all time. During a time where going outside in the real world felt a little scary, I could escape to my virtual paradise and plant flowers and learn about the local flora and fauna. I caught bugs and fished. I terraformed. I watched shooting stars. I couldn't see my friends in real life, but we could hang out in-game, visiting each other's islands. It was as delightfully wholesome as it sounds and it was a balm to my over-stimulated nervous system.

Nothing will ever replace spending time in nature in the real world, but there is something to be said about the ability to recreate the emotions connected to being in nature. I know that I would much rather spend an hour or two playing video games than watching television because I know I will be more engaged and have more fun with my time. I love that I get to experience nature in multiple forms, both outdoors and in, and take comfort in knowing that an escape from reality is never too far away.

Book Review:

Field Study

by Helen Humphreys

“In the nineteenth and twentieth centuries, collecting and pressing plants and flowers was a popular pastime the world over. Amateur and professional collectors gathered their specimens into notebooks and cabinets, preserving the botany around them for posterity.”

— Helen Humphreys

I read this book in one sitting and it felt as though I had spent the afternoon with author Helen Humphreys. The book is an intimate account of her time spent at her local herbarium as she sought to find connection to those long gone. Humphreys set out to spend an entire year studying the contents of the herbarium. She describes her visits as “... an exquisite kind of time travel. And by learning more about the intersection of people and nature in the past, I hope to gain some understanding of where we can go from here.”

I love the concept of visiting the past via herbariums. Plants were collected for years by botanists and amateurs alike. The collections in a herbarium tell us a lot about what a certain area was like during that period of time. It also allows us to study plants that may no longer be around. Humphreys' writes, “the herbarium is a catalogue of dead plants, but perhaps it also tells us, equally, about what it is to be alive - that the dead and the living not only share the same space but are, in fact, equal.”

The collection and preservation of plants has been around for centuries and is still practised to this day. I really enjoyed learning that many of the submissions at the herbarium Humphreys was visiting were done by people living in the area. These people,

send them to the herbarium to be submitted into the collection. This level of naturalism is important to keep a record of a local area, even to this day.

The descriptions of the plants in the herbarium are a delight to read. Humphreys shares descriptions of plants that people submitted along with their specimen and they vary from scientific and detailed to poetic and whimsical.

Throughout her book, Humphreys encourages the reader to not lose hope and to appreciate what lives and thrives around us. She stresses the importance of taking climate change seriously but acknowledges that the constant stress and worrying about the outcome of the planet can be taxing. It's important to focus on what is around us and what we have to protect. It's a nice message, and one of the more optimistic ones I've read in a book that touches on climate change.

There were a lot of women mentioned in this book and a recurring theme is that it used to be unsafe for a woman to go out adventuring and plant collecting on her own, so many women kept to smaller areas (like their backyards) to collect and observe plant specimens. It's a fascinating insight to what the world was like in the nineteenth century, particularly for women.

Humphreys talks about a woman named Mary Treat, one of four women botanists in America who were published before 1880. Mary was self-taught and well respected by professional botanists and scientists, including the likes of Charles Darwin and Asa Gray. I was surprised to learn that Mary didn't travel far to collect and study her specimens. Like many women at the time, she spent most of her time in her own yard. “The smallest area around the well-chosen home will furnish material to satisfy all thirst of knowledge through the longest life.”

Overall, *Field Study* was an inspirational read. It really spoke to me on multiple levels. I appreciate Humphreys' honesty and emotion in her writing and how lyrical her prose is. It was a short read, only took me a night to get through, but its impact was lasting. I love plants and learning about them, and this book inspired me to continue on my journey and remind myself that the smallest of contributions to the scientific community can make a big impact. If you enjoy plants and learning more about the history of plant collection and the role that herbariums play for conversation, this may be a good read for you.

