

# MAKING SPACE FOR BEES, RADICAL PLANNING AND THE MESSY CITY

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**ABSTRACT:** Bees and other pollinating insects are increasingly at risk in agricultural spaces, due to years of intensive monocultures, pathogens, imported species and pesticides. New research identifies urban spaces as a bastion of insect biodiversity, but in order to maintain these precious species space must be made available to combat loss of habitat. As the spaces need not be large, radical and activist planning efforts to introduce pockets of wilderness in the cracks of the city may offer the best hope to maintain bees in urban environments.

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## INTRODUCTION

A bee, as defined by the Merriam Webster dictionary, is: “any of numerous hymenopterous insects (superfamily Apoidea) that differ from the related wasps especially in the heavier hairier body and in having sucking as well as chewing mouthparts, that feed on pollen and nectar, and that store both and often also honey.” This broad definition is the most workable definition for a family that includes over 20,000 different species, 4,000 of which live in Canada alone. There is increased awareness that bees are struggling, disappearing at an alarming rate and the attention and care is largely being lavished upon the more glamorous bees: the ever productive honey bees. Of course, honey bees are only a small fraction of bees, and so the problem must be approached from multiple

angles if it is to be solved in an urban setting and to that end, this literature review will approach what is currently known about these diverse insects from several lenses: bee health and scientific studies conducted on the subject, the role that these species play in human lives and landscape and urban design decisions.

## THE ROLE THAT BEES PLAY

Bees have always played a role in human society as a beneficial insect. There is evidence that early humans would have noticed that the honey they desired would be easier to harvest, if honeybees were encouraged to build their nests in human supplied cavities. Neolithic cave paintings show humans seeking hives, but it was likely Fifth Dynasty Egyptians who first harnessed these animals for their own exclusive use. From that point on, the fate of honey bee and human has been inextricably intertwined. The cultural value of bees was so important to the Egyptians that the bees themselves were referred to as Tears of Ra, the manifestation of the sun. From there, beekeeping spread across the ancient world, with different styles of hives being preferred in different locations, vertical in Africa or horizontal in Greece, and the familiar Langstroth boxes seen dotting orchards across North America.

Despite their abundance in Europe and Africa, honey bees were late arrivals in North America. The first record of their importation was in 1621, in Virginia. From there, honeybees have spread across North America and become a fundamental part of agricultural systems.

Quantifying the role that bees play in human lives is difficult. Setting aside the human agricultural value, for a plant, bees are irreplaceable. Millennia of coevolution has left many plant species with no means of reproducing without the assistance of pollinators, the most common of which are bees. Angiospermic plants, those that produce fruits, are especially dependant on bees, as those without self pollination ability require assistance to transfer pollen. This means that even for plants that are able to self pollinate, pollinators provide the ability to transfer genetic material to new plants, ensuring genetic diversity and a better chance to flourish in the face of future adversity. In a world without bees, fruit species such as grapes and tomatoes would still exist, but without the size and sweetness to which we have grown accustomed.

Much of the literature surrounding the role that pollinators play within agriculture is grappling with the role that these insects play in pollination, and envisioning a world where these services are no longer available on demand.

*Native Bees, native plants and crop pollination in California*, an article put forth by the California Native Plant Societies periodical, Fremontia, Claire Kremen investigates the role that native bees play in California's agriculture." Most agriculture dependant on bees focuses its attention on honeybees, as these creatures are easily transported and can be shipped from site to site where they are needed. As climate change and colony collapse plague the imported honey bees, pollination services have declined by half, even as demand increases.

Canadian native bees are considerably less studied than honeybees. They do not live in hives, generally, and they do not require human interaction to survive. They do not create honey, wax or pollen that we desire and so their involvement in our lives is less immediately noticeable. That does not make them less important. For some plant species, such as blueberry and alfalfa, native bees are better

pollinators than honeybees. Unfortunately, native species are seeing a concurrent decline with their agricultural relatives, as issues of climate change, pesticide use, fungal infections, and habitat loss are leading to population collapse in some once common bee species. Unlike honey bees, native bees cannot be moved from place to place as needs arise, and so alongside calls to monitor these creatures and research their status are calls from the scientific community to create spaces where these bees can live alongside agricultural land. Also, unlike honey bees, native bees cannot easily be coaxed into nesting in manmade homes, choosing instead underground burrows, compost heaps and nooks, leaving them especially vulnerable to territory loss.

There is a lack of awareness about the issues faced by pollinating species and wild bees in particular due to a general lack of interest and lack of historical record keeping. Often, records kept by amateurs note species as being rare, or common, without a benchline to compare what these terms mean. Complicating this, is the fact that many wild bee species are not specialists, meaning that the loss or diminishment of one species can go unnoticed at first. Some plants, however, would not survive the loss of their pollinators and should habitat encroachment and climate change continue to affect the bees without recourse we will see the loss of certain bee dependant species such as watermelon and gourds.

The role of bees agriculturally has been quantified. It is estimated that 66% of plant species are pollinated by bees, 90% of cultivated species are visited by bees, and 30% cultivated species rely on bees as their pollinator. The Agricultural Department of the United States of America estimates that honeybees alone are responsible for 5-14 billion dollars of value every year. Nutrition is a factor as well, with pollinator dependant plants providing the majority of fluoride, folic acid, and vitamins A and C in the human diet.

Most research done regarding the role bees play in human health and agriculture relates to cash crops and large-scale agriculture. The role of wild bees is beginning to be researched, as honey bee colonies have collapsed by half their number since the 1950s. It was noted in the study *Crop pollination from native bees at risk from agricultural intensification* that native bees could provide the same pollinating services as honey bees, but that current agricultural practices were greatly diminishing native bee populations because honey bees are favoured.

#### *HUMAN ROLE OF BEES IN THE CITY*

The role of bees in cities cannot be separated from human involvement. Creating places for nature within urban spaces can be difficult; land is a premium commodity, and development, housing, and commercial uses are considered more valuable than undeveloped, often wild and scruffy looking green spaces.

Interactions between humans and bees can be more than purely economical; in urban environments, visitor to a new community garden should look between garden boxes for smaller wooden boxes, for native bees, or larger stacked boxes for honey bees. Native bees do not require tending in the way that honeybees do, and so management takes the form of providing flowers and spaces for them to nest. The article *Safeguarding Pollinators and Their Values to Human Well-being*, put forth a good summary of the value bees, as a pollinator species, hold to human survival and continued agricultural variety, but also touch on the less tangible benefits. These include cultural values, such as art and “aesthetically important flowers”, as well as religious and symbolic meaning connecting people to home and landscape.

#### *GARDENS AS EDUCATION*

Some apicultural garden communities focus on education as a form of community building. In Colorado, amateurs and curious alike are able to join volunteers to learn how to manage their own hives, or to gain familiarity with the skill. Since the hobby can be a daunting one to begin, the classes are offered for free in order to maximize accessibility. Conversation and dialogue are crucial in beekeeping. Education is often included in these spaces as “attention to beekeeping shows complex entwinement of control and care, working with and against bee capacities, feelings of captivation and indifference, negotiations of life and death.” It is important to note that although beekeeping is often combined with agriculture, urban beekeeping plays a role partially separate from that. Due to the use of pesticides within cities the honey that is gathered risks contamination, and therefore cannot be sold except through personal networks. The flowers that they pollinate are not necessarily fruit bearing, and the hives are not moved to areas where farming is present, as in commercial beekeeping, and so there is no agricultural component to the bee’s cultivation in these spaces. The beehives that are managed with an urban setting are managed for different, less tangible, reasons and the communities that care for them and promote them do so for personal reasons. When residents have no room, or lack the skills to maintain a beehive and instead choose to create and host small ‘bee hotels’ the reasons for doing so are not necessarily because native bees will result in better tomatoes, but something more complicated and emotional. One of the challenges noted in the preliminary research on the subject of urban spaces for bees is grappling with the ‘why’. As noted above, there is a wealth of knowledge and justification as to why certain bee species are invaluable for human and agricultural well being, but why create spaces for the insects that are not so clearly precious?

For this reason, among many, it is important to involve the community in the creation, propagation, and management of bee habitats. It is noted in the article *Beekeepers' knowledges and participation in pollinator conservation policy* that there is knowledge within the beekeeping community that is difficult to quantify and tap into for the purpose of scientific inquiry. The authors note that the beekeeping community rely on traditional environmental knowledge, a field of knowledge traditionally separate from scientific study. This is why the authors chose to use mixed methods, an inquiry background combined with sixteen in depth interviews, to see what information regarding habit and hive health is in the hands of apiarists. Two issues this study brought forth are especially valuable for future inquiry. Firstly, the article notes that there are parallels with indigenous land management and indigenous environmental knowledge in the oral nature of this knowledge and the relative lack of value given to this knowledge in comparison to western scientific process, despite clear value. Secondly, the authors note that there is great distrust and competition about value between these two bases of knowledge, leading to gaps in practice and understanding.

This gap is between local and Indigenous knowledge and city park practices is especially crucial regarding the Garry Oak ecosystem that is celebrated and preserved in Beacon Hill Park, Victoria. Unlike a grass lawn, camas fields, the beautiful purple blue flowers that hum with insect activity in the spring, are the product of generations of Lekwungen burning and harvesting and require management in order to continue to thrive, even as the endangered ecosystem is threatened by land development and fragmentation. Knowledge is crucial to creating plant gardens that are beneficial for insects, knowing that these spaces might not be best or most desirable for humans. Well meaning gardeners seek to remove beneficial plants seen as weeds, such as milkweed, stinging nettle, dandelions and death camas, or destroy spaces

that create nesting sites such as misidentifying carpenter bees as more destructive carpenter ants, spraying rose bushes when chewing becomes apparent, and removing rotting logs and composting leaf piles without knowing that they are killing bees.

### *CONVERSATIONS ABOUT BEES*

Beekeeping both wild and domesticated, by its nature, involves conversation and education, bringing people in and, in educating and working to be accessible to new and curious community members. In these environments, where mutual interest brings together people of diverse backgrounds and interests and unites them in a shared space separate from both work and home, beekeeping sites can reasonably claim to be 'third spaces'. Because bees are largely self managing, their hives do not require visitors to attend to them at specific times. People may come and go as they please and engage at their leisure. In their study of Glasgow's community gardens, *The Work of Community Gardens: Reclaiming Place for Community in the City*, the authors note that the role these spaces played in the community was not simply food production. "It is important that the garden is much more than just food growing and it is a space people can come and use for storytelling and crafts and music performances and things like that."

For those neighborhoods that do not have a dedicated park space or skilled beekeepers ready to manage a new hive, they will bring a hive to a backyard, and begin the education through there, thereby ensuring that even in denser neighborhoods no one is without the option of trying this new hobby. By doing so, the volunteer backyard becomes the nexus of apiculture within that neighborhood. Where there are no backyards, but the location is near a public park, as is the case for the New Horizons Activities Center in James Bay, Victoria, beekeeping and native bee gardens are managed by volunteers from the community to create a space that is

open for all. Though the management of the hives is done by a professional, the garden and the native bee boxes are open to all, amateur gardeners and those who are simply looking for a floral place to rest in the park.

Still, providing public wilderness spaces within urban areas requires consultation and community buy-in. Not in my front yard explores community perspectives regarding urban pollinator meadows. The United Kingdom researchers did this by exploring two fundamental questions “1) What do urban greenspace managers perceive as the key factors determining the opportunities and challenges of managing GI as perennial urban meadows? 2) Does perception of the relative importance of these factors vary between individual managers based on their values and their managerial role?”

Cities in particular provide an exciting opportunity for pollinators. It has been noted that for bees, and especially bumblebees, that chose to nest in compost, mouse dens and other underground spaces which leave them vulnerable to intense landscaping, cities offer the possibility of greater species numbers and diversity than previously thought, and small planning decisions can provide outsized benefits. Biodiversity, especially, is highlighted as a benefit cities are able to provide if land is managed effectively. If done poorly, urbanization, especially pavement, buildings, overwatering, digging and non flowering lawns, mean the death of bees. In Vancouver, peak bee diversity was found in undeveloped lots and naturescapes, rather than, as expected, in private gardens. This suggests that cities, as well as and perhaps more than homeowners, have the ability to create refuges for these creatures. The same study though noted that once common bee species, such as *Bombus Occidentalis*, had declined dramatically in twenty years, perhaps linked to the rapid growth seen in Vancouver’s downtown and the development of previously agricultural land.

The author of ‘Bee Hotels’ as Tools for Native

Pollinator Conservation: A Premature Verdict notes that a large part of the enthusiasm for bee amateurs comes from the belief that by creating these spaces they are ‘saving the bees’ and providing a necessary service. Author J. Scott MacIvor notes that creating and placing these spaces needs to be done with a firm understanding of science, lest the creator do more harm than good.

Professionals developers are also recognizing the economic value that urban gardens and apiaries can create, some developers viewing them as “an added amenity for tenants, similar to a gym or a media lounge.” Citylab author Steve Holt’s article on the subject notes a comparison to a media lounge which suggests that the purpose of creating these spaces within a development is not simply for the esthetic beauty or the food creation, but as a community space and a way for people to engage with their surroundings and entertain themselves when they are not at work or in their homes. This suggests that planners and designers of these developments see urban apiaries and their surrounding gardens as third spaces when considering what requirements must be met for a successful new community.

## A ROLE FOR RADICAL PLANNING

The theory that could be applied to a beehive, when tended by people who create these communities in spite of local government by-laws that either do not support or don’t acknowledge them, is radical planning. Radical planning is, as described by the authors of *Comparison of Current Planning Theories: Counterparts and Contradictions* “associated with spontaneous activism, guided by an idealistic but pragmatic vision of self-reliance and mutual aid.” Mutual aid, one could argue, could be the beneficial relationship of bee, plant and human consumer. Though the act of creating a community apiary space does not seem radical in itself, the act of creating these spaces within an urban area, in underutilized lots, in the areas

at the foot of driveways, organizing and creating community gardens, is often an act of self planning, done bottom up and often with initial pushback from governing bodies, whose zoning does not always accommodate these activities. As beekeeping can be classed as agriculture, and output product, if sold, can create a business, the difficulty of determining legality and ordinance has led to some beekeeping communities to act extralegally. As beekeeping communities have grown, however, cities across North America are being pressured to amend their zoning and bylaws to allow these spaces, either privately or communally owned. In part, this move to address regulation issues was done in recognition of the spaces role in the urban fabric. As noted in the report *Towards a New Approach to Beekeeping Policy in Urban Ontario* published in 2012: “Beekeeping allows practitioners to engage with nature seldom found in urban areas, and to develop like-minded communities. From this perspective, the benefits of beekeeping encompass the wellbeing of communities broadly, as citizens provide their own secure food supply and build connections.”

Authors Rina Ghose and Margaret Pettygrove, in their article *Urban Community Gardens as Spaces of Citizenship* note that community gardens are rarely the first choice for land use, and the act of carving out a space for the community to garden, especially when land values are high, is not always easy. “Conflicts over urban land use and rights to space are common, as urban redevelopment projects prioritize economic development and housing over community gardens.” They note that creating these spaces can be an act of social defiance and “civil disobedience” when the city does not offer a permit, or the zoning does not support.

This is radical planning at its most elemental. Though in the above noted situations the government did come to legalize urban beekeeping communities, it was not through straightforward political activism or legal

precedent, legislation came about to recognize and affirm actions that were already taking place within communities. Community gardens, and beekeeping are “conceived as spaces through which citizens can challenge dominant power relations and claim rights to the city.” By creating these spaces large and small, and creating them before they are recognized by bylaws and regulation, citizens can create for themselves third spaces that do not require commerce to survive and are instead built around mutual interest, education and space occupation. When bylaws do not support beekeeping, or worse, ban it, those interested in the hobby have to resort to extra-legal alternatives, leaving otherwise law-abiding citizens to become bee fugitives as was the case in Edmonton when in 2013 Malcolm Connell, a retired English teacher, began running an underground beekeeping community. He believed the following about his work:

“It helps kids understand nature, and the cycle of life, and the relationship between plants and creatures.” Connell says there has been a quiet influx of urbanites to the Edmonton District Beekeepers Association, and he hopes that someday Edmonton will join Toronto, Calgary and Vancouver and allow hobby bees within city limits.”

The education and community provided by the Edmonton District Beekeepers Association, though run surreptitiously and kept tucked away from bylaw officers eyes, provided a third space for those ‘quiet urbanites’ to engage in a community outside of their work and home life. In 2015, in recognition of the “value of urban beekeeping” already taking place in its city, Edmonton legalized urban apiaries in its city limits, a success for radical planning and recognition of a movement taking place amongst its citizens. This same cycle, of amateur underground apiculture being recognized after it has already become a vibrant scene, has played out globally. In 2014 Los Angeles was moved to review its zoning to allow urban

beekeeping, which had been underground, in order to encourage local beekeepers to come forth about their hives. They wanted to encourage these communities, as agricultural beekeeping had been faltering in the advent of colony collapse disorder. Urban bees were not numerically strong enough to replace their agricultural counterparts, but the knowledge in the community as well as the hives that remained intact were a bolster.

A small search into urban and provincial pollinator strategies in Canada yields very little. Ontario seems to have the most forward-thinking policies regarding pollinators and strategies for their health and well being. Toronto has been given a special designation, first Bee City in Canada; this is a title that indicates that pollinators are given a priority in its city space, as it seeks to “1) Create and enhance habitat 2) Design and connect green spaces 3) Partner and build relationships 4) Invest, incentivize and inspire 5) Educate and train 6) Celebrate and recognize achievements.” Toronto’s policy notes the honeybee, as it is the most familiar species and is the species that requires specific bylaws for its management in urban centers. However, the city was undaunted, stating that though colony collapse leads to massive hive loss, farmers and apiarist can simply purchase new ones. The focus is on wild bees, whose numbers are lower and more sensitive. On a Federal and Provincial level, Ontario continues to lead, with the department of Agriculture and Agri-Food issuing the document Native Pollinators and Agriculture in Canada and the Ontario Province’s “Pollinator Health Action Plan.” The Department of Agriculture’s focus is, naturally, food and agricultural uses for bees. The Provincial plan is broad, covering all aspects of bee health and threat, but since it must cover a large and diverse geographical area the advice it offers would need to be tailored to local concerns. In provinces with broad ranges of different biospheres, more tailored plans focusing on the identification, integration and

preservation of unique biologically rich areas should be done on a local level. Some native species are specialists, and the loss of their preferred plants is a devastating blow, the first step of the city should be to protect the areas most ecologically valuable, with the understanding that no matter how beautiful a garden is, it will not replace an intact environment.

While city support is crucial in maintaining the pre-existing spaces that are favoured by bees and other pollinators, there is room for and there should be support for radical planning initiatives to support and augment this. Local concerns, and local knowledge, are best employed by the people who understand their unique communities best: locals. Citizen scientists, such as the Butterfly Rangers trained under the auspices of the David Suzuki Foundation, work to educate and inform other concerned citizens in the best way to create pollinator spaces downtown; other citizen brigades monitor and track numbers within their neighborhoods. These homemade corridors can be created by citizens without funds or design, and can function to connect existing ecosystems, creating pathways that prevent isolating habitats and creating a network of greenery throughout the built environment. Boulevard garden guidelines, in both the City of Vancouver and Victoria both provide guidance to gardeners regarding sightlines and city access, but allow residents to express their own creativity in creating these green spaces. In Victoria, this program was created by citizens, and was adopted and perfected by the city to reflect what was already taking place on the streets.

While local governments will always have the final say in land use, there should be spaces made for flexibility and spaces set aside other than relying on the goodwill and knowledge of those with backyards. As bees thrive in unattended areas, on underappreciated weeds, filling in gaps and making use of land that is perceived to lie fallow, so to do neighborhoods. Ironically, areas that are the largest blights on cities, such

as under developed or contaminated brownfield sites often have the largest diversity of species. On Vancouver Island, bees thrived in Garry Oak ecosystems, but meadows are increasingly difficult to find and overgrown lots filled with flowers may be the closest substitute. As an aside, it is worth remembering that Garry Oak Meadows were originally managed ecosystems, cleared of forest carefully weeded and burned and therefore selected as the best locations for development of farms that would become cities.

The best way for the city to support the effort to reclaim these spaces by insects (and citizens) might be to back away. There will always be risk associated with insect cultivation and consumption, but in this case, the bigger risk is losing these spaces in the quest to create perfect, manicured, sterile spaces. The current order, centralized top down bureaucratic planning, is ill equipped to deal with imperfection, mess and weeds. Monetizing the value of the land pushes out less economically valuable, though perhaps valuable in their own, intrinsic way, land uses. Crucial, wildflower filled brownfield sites, even those with expensive remediation requirements, will eventually feel the push to develop as cities grow. It is only when community gardens and wilder downtown growing spaces become legitimized in both the views of the public as well as the municipal planning goals do they become permanent, but these spaces can be created before they are officially recognized through the work of local initiative to carve out spaces for the insects that are losing territory. Cities can assist this effort by providing support, education on native landscapes and acceptance of these spaces, perhaps resulting in spaces such as the beautiful boulevard gardens that brighten up the streets of Downtown Victoria. Support and education about the valuable native species in the backyard can assist those who wish to take on projects of their own, guiding future gardeners without enforcing overly burdensome requirements.

If beekeeping, wild or domestic, is beyond

the ken of the average homeowner, a meaningful way to help still exists. Do less. Worry less about the state of the lawn, or the dandelions in the street cracks. Do not concern yourself with the pile of leaves in the back corner, raked and piled but never bagged, the bees thank you. In the words of a Butterfly Ranger, if munch marks in your garden are causing you stress, take ten steps back! Nature thrives in imperfection, messy, spontaneous and uncontrollable, and so does radical planning.

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