

Urban Livestock: Barriers and Opportunities Faced by Homesteaders in the City of Waterloo

Heather Cann, Dave Lenton, Cassandra Mader, and Jennifer van Overbeeke
December 6, 2011

Abstract

Industrial agriculture, in many respects, is no longer a functional means of supplying food for quickly growing and urbanizing human populations. Instead industrial agriculture acts as a system that relies on sameness and transportability of products as main points of desirability, and presents a vast array of biophysical, economic, and social stumbling blocks to environmental and human well-being. A highly diverse web of non-governmental organizations, civil-society groups and individuals are actively pushing for a change in these food systems.

Reconnecting people with their food systems has the power to engender healthy eating and support of local food systems. As such, this study investigates the barriers and opportunities associated with urban livestock rearing—specifically chickens, honey bees and goats—in the City of Waterloo. Urban livestock rearing is becoming increasingly popular throughout Canada and North America: people are excited to realize the potentials of rearing their own chickens, bees or goats (as well as other livestock) in urban settings, and regain a sense of connectivity to their food systems. Our research revealed that while practical issues of animal husbandry and other concerns seem most important on a surface level, they collectively indicate how ideological stances – what things are most valued, what practices are considered normal or not – present the greatest barrier to urban livestock integration.

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Money does not bring forth food. Neither does the technology of the food system. Food comes from nature and from the work of people. If the supply of food is to be continuous for a long time, then people must work in harmony with nature. That means that people must find the right answers to a lot of hard practical questions.

- Berry, 2001.

1.0 Introduction

The nature of human societies is changing; people are becoming increasingly congregated in urban centres and increasingly disconnected from food systems. “Local food systems have been increasingly replaced by a globalized food system, governed without much transparency by a few governments and institutional arrangements, and strongly influenced by the small number of transnational corporations that dominate” (Ishii-Eitman, 2009, p. 217; Wies, 2010). Decreased connection to personal food systems, and instead, reliance on hinterlands and international sources means that systems are becoming ever-more vulnerable to food insecurity (Godfray et al., 2010; Kneen, 1995; Satterthwaite et al., 2010). Forces causing this food insecurity include Peak Oil, Climate Change, and civil unrest, to name a few.

Disenfranchisement with the food system is consistently reflected in the literature. Desjardins et al. (2010), writes about how human health does not necessarily fall high on food agendas, and how “current agriculture production in North America is not primarily organized around the nutritional requirements of the population” (Desjardins et al., 2010, p. 130). Weis (2010) discusses how the availability of cheap oil gave rise to the current industrialized food system, which is promoted as being hyper-efficient. Yet, when one examines the externalized costs of this “efficient” food, a number of inefficiencies come to light, including,

- ☐ “the contribution to chronic epidemiological problems (e.g. obesity, cardiovascular disease) and the extensive burden on health-care systems;
- ☐ the costs of managing and responding to disease threats such as swine and avian flu, *listeriosis*, *E. coli* and mad cow;
- ☐ the diffuse impacts of fertilizer, chemical and other waste runoff from industrial monocultures and factory farms on terrestrial and aquatic ecosystems and human health;
- ☐ the associated costs of water treatment;

- ☐ an assortment of workplace health concerns (e.g. high rates of repetitive stress and accidental injuries); the psychological violence associated with factory farms and industrial slaughterhouses; chemical-laden environments;
- ☐ and the immeasurable suffering of rising populations of animals reared in intensive confinement, along with the unquantifiable ethical issues that this entails” (p. 316).

Furthermore, food has long been deceptively inexpensive, and rises the price have oil have led to increased volatility in food prices (Mittal, 2009; Weis, 2010).

Participants in the food system are beginning to recognize that “the globalized and mechanized food-production-and-distribution is not sustainable”, and that cities must return to producing food at a more local scale, within their own “hinterlands” or within urban environments (Lang & Miao, 2010, p. 2). “Strengthening local and regional food systems offers a compelling pathway toward achieving equitable and energy-efficient food production and distribution... promising approaches include... the encouragement of urban and peri-urban agriculture, an increasingly important component of food security in many countries” (Ishii-Eiteman, 2009, p. 223). Desjardins et al. (2002), in a publication for the Ontario Public Health Association (OPHA), suggests that food security is a public health issue:

“By the 1970s, an increasing body of medical evidence pointed to the association between high fat, low fibre and anti-oxidant nutrient intake at the population level and the incidence of a number of chronic diseases.” (Desjardins et al., 2002, p. 3)

“Since the 1980s, the growing number of people experiencing food shortages and hunger (concurrent with the reduction in social assistance programs, federally and provincially) was gradually recognized as a public health issue.” (Desjardins et al., 2002, p. 3)

A community food security paradigm provides an alternative food system that ensures, “secure access to adequate amounts of safe, nutritious, culturally appropriate food for everyone, produces in an environmentally sustainable way, and provided in a manner that promotes human dignity” (Desjardins et al., 2002, p. 2). Lang & Miao (2010), recognize that “cities face the biggest set of problems in making such a transition” [away from high-energy-high-consumption], but also recognize that “food security... the relocation of food supply to make cities and towns resilient enough to survive and carry out their functions without relying on a global and highly mechanized food industry for the production of food” (p. 2). The video documentary *The Power of Community: How Cuba Survived Peak Oil*, illustrates the

power of communities in the face of food crisis issues, demonstrating how urban space can be reclaimed for food production (Morgan et al., 2006). Roberts (2009) takes localized food systems one step further and suggests that a “modern and affluent economy” can be built on “agriculture, food and their allied occupations”. Roberts writes, “the economic life cycle of food offers opportunities for just such transformative change due to the number and positioning of green-collar jobs” (p. 32). Harris (2010) discusses the sense of place that Alternative Food Networks can provide participants.

Research Focus

Reconnecting people with their food systems has the power to engender healthy eating and support of local food systems. As such, this study investigates the barriers and opportunities associated with urban livestock rearing in the City of Waterloo, specifically chickens, honey bees and goats. First the report provides an introduction to urban agriculture, and the advantages and barriers to urban agriculture, which includes the raising of livestock, in the context of the Global South and Global North. The study then investigates the policies governing animal rearing within the City of Waterloo, provides a discussion of hen-, honeybee-, and goat-keeping, and case studies from other cities.

Research Question

What barriers and opportunities are faced by urban livestock homesteaders in Canada, specifically in Waterloo Region?

Research Methods

This study integrated a broad literature review on food systems and urban agriculture, as well as, narrower literature reviews on hen-, bee-, and goat-keeping, with semi-structured qualitative interviews with livestock keepers, as well as a planning lawyer. Because of time constraints, only six interviews were conducted. A list of interviewees, with short biographies, is included in Appendix D.

2.0 Urban Agriculture

Urban agriculture is defined as, “the growing of plants and trees and rearing of livestock within or on the fringe of cities” (De Zeeuw et al., 2011). The Food and Agriculture Organization (FAO) of the United Nations (UN) coined the term “urban and peri-urban agriculture (UPA) to describe these farming activities within and on the outskirts of cities” (“Issues in urban”, 1999). Currently urban agriculture is being presented as a solution to food insecurity in Global North and South (De Zeeuw et al., 2011; Deelstra & Girardet, n.d.; Mkwambisi et al., 2011). In 1999, the FAO estimated that 800 residents were involved in UPA activities, either earning income or producing food (“Issues in urban”, 1999). A more recent study focusing on urban agriculture, states that, “up to 70 percent of urban households participate in agricultural activities” (“Policy briefs”, 2010). The UN states that UPA can contribute to food security (and food sovereignty) in a number of ways, including: increasing nutrition, providing fresh perishable foods; and providing low-barrier entry employment (“Issues in urban”, 1999). Individuals participating in urban agriculture tend to be the poorest in the community and rely on urban agricultural activities to satisfy food requirements (“Policy briefs”, 2010).

In a Malawian case study, where food insecurity and unemployment are common problems, low-income households often used urban agriculture as “insurance against income losses” (Mkwambisi et al., 2011, p. 181). Here, urban agriculture has become an important source of food, which provides crucial nutrition for household diets. In the developing world, food expenditures count for a large amount of household budgets (Levin et al., 1999; Mkwambisi, 2011). In Accra, Ghana, mean household expenditure on food accounted for 54.5% of total expenditures. This percentage rose to 60% in poorer households (Levin et al., 1999).

The integration of livestock, however, is noticeably absent in peer-reviewed literature on urban agriculture in the Global North. That being said, there are numerous non-governmental and civil society publications exploring the wide spread benefits of urban livestock integration (Astyk, 2008; “Priorities for Waterloo”, 2011; Schiere et al, 2006).

Despite resistance to urban livestock integration, animals have not long been absent from busy cities (Blecha, 2007). Prior to World War I, cow dairies were readily found within city limits - not only as a means of providing fresh dairy where needed, but also as integrated elements of waste control (Hough, 1989). With the advent of World War II, governments pushed for a renewed interest in urban agriculture towards increased food security in uncertain times - particularly in Britain, Canada and the United States

(Astyk, 2008; Hough, 1989). Vancouver citizens, for example, urged by government “wartime garden” programs, produced 31,000 tons of fresh fruit and vegetables in 1943 alone (Hough, 1989). While the advance of cheap energy turned urban pursuits away from agricultural and towards perceived luxury pursuits (Hough, 1989) seeing urban agriculture in its historical context reminds us that people and livestock have co-habitated successfully before, and can do so again.

2.1 City of Waterloo

Hen-, honeybee-, and goat-keeping activities are not permitted within the City of Waterloo. While the City promotes urban agriculture in the form of community and backyard gardens, there is an absence of institutional support to integrate livestock.

With this in mind, how does the rearing of hens, bees and goats fit into the wider context of provincial and municipal policy? Broadly, the provincial government assigns spheres of influence to municipalities via Ontario *Municipal Act* (2001) and *Toronto Act* (2006), which allow municipalities to regulate certain aspects of a society and/or area. One of the spheres of influence granted by the province is animal control, ownership, and regulation (Animal Control By-Law, 2009; E.D., personal communication, November 11, 2011). Through bylaws, municipalities can adopt particular stances on issues that might be considered ambiguous or contentious within their region. The City of Waterloo’s stance on urban farming is split. The City supports urban garden for residents and communities, but does not permit the raising of livestock for meat or by-products, such as eggs, dairy and honey. In cases where municipal by-laws conflict with the initiatives, goals, mandates, or laws of the provincial or federal government, they can be overturned (E.D., personal communication, November 11, 2011). For example, when an estimated 20-30% of neighbourhoods in Ontario banned the use of outdoor clotheslines, the provincial government was able to effectively overrule municipal decision-making. Under Ontario’s *Energy Conservation Leadership Act* (2006), the province felt that people had the right to exercise practices (such as hanging laundry on outdoor clotheslines) that would conserve energy. It was argued that clotheslines were a valid way of saving energy by using the sun to dry clothing instead of electric dryers (Benzie & Gorrie, 2008; “Ontario premier lifts”, 2008). Dryers use approximately 6% of Ontario’s power generation (“Ontario premier lifts”, 2008). For hopeful urban farmers, this ruling creates precedence for provincial intervention in municipal decision-making that may contradict province-wide visions for food security.

The province does not appear to have a clear position on urban agriculture. The **Ontario Ministry of Agriculture and Rural Affairs** has an “information bundle” on the raising of livestock in urban environments, but this is more of a collection of information, rather than a stance in favour of urban agricultural activities. This information bundle provides information and web links to relevant Acts, associations, and best management practices (“Urban agriculture business”, 2011b). Key phrases found on this website include, “animal health”, “biosecurity”, “deadstock disposal”, “legislation”, “manure management”, “predator control”, and “slaughtering”; all demonstrating what kind of resource the province is providing.

The **Region of Waterloo Public Health** issued a report on urban agriculture activities in 2005 (Mazereeuw, 2005), describing how urban agriculture “contributes to the quality of life and health of individuals, families, and the community as a whole” (Mazereeuw, 2005, p. 2). The report limited its scope to “community gardens, rooftop gardens (and green roofs), and backyard gardens”, concluding that “urban planning should strive to include urban agriculture in its design (Mazereeuw, 2005, p. 24).

There are two sections to the **Region of Waterloo’s Official Plan** which could theoretically be applicable to an urban agriculture vision that includes livestock rearing. Chapter 1, section 1.B, establishes a “vision for a sustainable and liveable Waterloo Region” (“Regional official plan”, 2010). As outlined in this Official Plan (attached in Appendix A), “a sustainable region is one that is robust, resilient and strives to live within its natural limits... Social sustainability involves building cities and towns as complete communities, which provide for the needs of all residents, foster social equity, inclusion and collaboration, and encourage healthy lifestyles” (“Regional official plan”, 2010, p. 1.B). Chapter 3, section 3.F, goes on to address “access to locally grown and other healthy food” (“Regional official plan”, 2010) (also attached in Appendix A). Here the region outlines support for a “strong and diverse regional food system [that] provides many benefits to the community”; a system that “encourages a range of food destinations within easy walking distance of where people live and work” (“Regional official plan”, 2010, p. 3.F). Additionally, this section recognizes that “The Region will collaborate with stakeholders to continue to implement initiatives supporting the development of a strong regional food system” (p. 3.F.5) and “The Region supports food system planning as a means of improving the regional food system” (“Regional official plan”, 2010, p. 3.F.6). In theory the Region of Waterloo appears to be promoting a very progressive stance on food security in the region, suggesting that they are open to further initiatives.

As mentioned above, there are a number of non-governmental and/or civil society publications that have begun exploring the benefits of livestock integration in urban environments; the **Waterloo Food System Roundtable** is one such group participating in this discussion (“Priorities for Waterloo”, 2011). In 2010 the Roundtable selected six priorities “for moving towards a healthy food system”. Item three concerned urban agriculture, encouraging the support of “the expansion of food grown or raised in urban areas” (“Priorities for Waterloo”, 2011). The Roundtable states,

“Some of our municipalities explicitly prohibit some urban agriculture such as the raising of chickens (the City of Waterloo banned it in 2009): lifting these prohibitions and actively encouraging urban hens and bees will help residents connect better with the sources of their food and improve access to fresh, healthy food” (“Urban agriculture”, 2011).

Taken together collectively, governmental and non-governmental publications seem to suggest an atmosphere highly conducive to urban livestock integration. The following sections discuss livestock rearing – hens, honey bees, and goats, for personal egg, milk, and honey consumption. The barriers and opportunities for each will be explored in greater detail, including safety issues and other concerns.

2.2 Urban Hen-Keeping

Believed to have originated from Asia, chickens (*Gallus gallus domesticus*) were domesticated over 8,000 years ago from the red junglefowl (*Gallus gallus*) (“The ancient history”, 2011). The domesticated chicken has been engineered from its wild ancestor to suit the needs of humans. Adaptable to a wide range of climates, domesticated chickens, with larger eggs and more meat per bird, have become a source of food for people across the world (“The ancient history”, 2011). As with dairy cattle, backyard chickens were not unusual for urban families before World War I (McKnight, 2011). However, with the demand of eggs for soldiers during the War, pressures on the chicken industry were high (McKnight, 2011). In the 1930s, following the Great Depression, the incubator was invented (McKnight, 2011). This allowed a large number of chicks to be raised, and contributed to the transition from backyard chicken-keeping to commercial flocks (McKnight, 2011). In addition, following World War II, many cities in North America began instituting laws against urban flocks because urban residents wanted to distance themselves from a rural lifestyle (Taylor, 2009).

For many urban dwellers, this worldview has changed. An increasing number of people are interested in reconnecting with food systems. Raising backyard hens is a viable means of boycotting what many people are beginning to perceive as dysfunctional food systems. With the ability to produce healthy food on a small scale, owners will learn responsibility, receive personal fulfillment, and help build local food security within urban areas (Bailey-Dick, 2011). Despite these benefits, many cities continue to ban urban hen keeping, including the City of Waterloo. To understand the concerns behind these bans, the opportunities and barriers of urban hen keeping will be discussed.



Figure 1. Backyard chickens (J.N., n.d.)

Opportunities

There are many advantages to owning hens in urban areas. An urban coop with three hens can produce approximately nineteen eggs per week (J.N., personal communication, November 25, 2011). This egg production can encourage urban hen-keepers to share with their neighbours encouraging positive relations (J.N., personal communication, November 25, 2011). Furthermore, laying hens, at the end of their life can become a source of meat. One survey participant, A.C., felt that developing an end-of-life strategy for your hens is an important aspect of urban hen-keeping that must be developed prior to starting (personal communication, November 25, 2011). Hens can live between 8-15 years; end-of-life

strategies could include slaughter, euthanasia or letting the hens die of old age. While some may find the idea of slaughter uncomfortable, A.C. suggested that it is the most sustainable option (personal communication, November 25, 2011).

Hens can also act as an effective pest control in backyard gardens, can eat food waste, and can create fertilizer for the yard (“The backyard chicken”, 2010; Salkin, 2011). In addition, keeping chickens is relatively inexpensive, where coop materials may range between \$250-1000 and the price of a hen is relatively low (J.N., personal communication, November 25, 2011). However, the up-front costs can be demanding for a low-income family, limiting the possibility of who can participate (A.C., personal communication, November 25, 2011).

Furthermore, as suggested by both survey participants, hen-keeping can provide firsthand experience with the food system (A.C. & J.N., personal communication, November 25, 2011). J.N. has four young children, and wanted them to have experiences of animals and where food comes from (personal communication, November 25, 2011).

Socio-economic benefits of hen-keeping in the Global South include the empowerment of women, economic gains, and education, indicates urban agriculture is about more than “just food”. Despite the laws against urban livestock, there are still many cities that continue to keep livestock in cities. For example in Dakar, Senegal, there are approximately five million domesticated fowl; Nakuru, Kenya has 375,000 chickens and ducks; and Ougadougou, Burkina Faso has 19,000 fowl (Hovorka, 2008). The economic gain chickens can provide to low-income families is significant. In Gaborone, Botswana, the relationships between women and their chickens has provided training and entrepreneurial success in the city (Hovorka, 2008). In Hovorka’s study, a Gaborone woman shared, “I have had my kids and all of them raised and educated with the help of these chickens. They keep bread on the table, pay debts, keep me busy, and pay [for] two laborers” (2008, p. 109). Urban chickens can help reconnect men and women with their rural traditions and lifestyles, as well as, provide a sense of personal fulfillment and encourage bonding relationships with other chicken-keepers in the community (Hovorka, 2008). These opportunities demonstrate the positive qualities of backyard hens in cities and often get overlooked by the potential barriers.

Practical Barriers

There are a number of practical barriers to the keeping of hens within urban environments. First, as mentioned above, **end-of-life** is an important consideration when choosing to participate in urban hen-keeping. If slaughter is considered, then the hen-keeper must make sure that neighbours and household members will not be negatively impacted by this decision, either through disturbance or personal attachment (A.C. personal communication, November 25, 2011). J.N. ran into the problem of having their hens become family pets that would have been difficult to slaughter for meat. For that reason, and others, they sent their chickens to friends in the country (J.N., personal communication, November 25, 2011). OMAFRA outlines responsibilities for individuals raising animals for slaughter (“Urban agriculture business”, 2011b). Concerns with slaughter often restrict the possibility of raising hens for meat in some cities (“Urban chicken farming”, 2011).

Second, it is believed that hens can attract **pests and predators** like coyotes, foxes, raccoons, and rats (Salkin, 2011). These animals are generally undesirable because they can cause damage to property and spread disease (e.g. raccoons and rabies).

Noise and odour issues also deter cities from permitting hens. High numbers of hens may be very disruptive to nearby residents and could create conflict between neighbours (“The backyard chicken”, 2010). Furthermore, there is a risk that not all urban coops would be properly maintained; strong odours and **health risks** associated with unsanitary conditions, are significant barriers to permitting backyard hens (“The backyard chicken”, 2010). Of course, this can be prevented if the owner knows how to provide and maintaining proper health and hygiene for the chickens (A.C., personal communication, November 25, 2011).

Time commitment must be considered before pursuing hen keeping. On average, fifteen minutes of work is required each day to collect eggs, replace the water, and check the health of the chickens. Twenty to thirty minutes a week is required for cleaning the coop (A.C., personal communication November 25, 2011). Furthermore, because chickens are a long-term commitment, certain groups, such as university students or short term tenants, would be inappropriate candidates for hen-keeping (A.C., personal communication, November 25, 2011). Next, there is concern towards the health risks of keeping chickens in urban neighbourhoods. Public health officials are concerned about the risk of disease being spread with improper disposal of bird feces and carcasses, as well as the risk of salmonella transfer from human contact with bird feces and eating infected eggs (“The backyard chicken”, 2010).

The most significant barrier to urban agriculture activities is objections to the activity by neighbours. Neither hen-keepers we interviewed had large **conflicts with neighbours**. J.N. stated,

“For the most part people thought it was fun and they were supportive. On one side of our house there is an old house converted into 5 apartments. 3 of the tenants liked to have daily parties and once I asked if they could try not to yell swear words as much while our kids are playing. Their response was that we shouldn’t have chickens. So illegal chickens, while not an issue for neighbours can add fuel to neighbour issues that may already exist. Since then, 2 of the 3 have died from over drinking. The issue wasn’t the chickens.” (J.N., personal communication, November 25, 2011).

A.C.’s approach to hen-keeping was to speak with his neighbours prior to starting. It was important to him and his household that their neighbours were alright with the activities. Had their neighbours objected to the hens, even though it would have been perfectly legal for A.C.’s household to have them, they would have found another way to participate in alternative food systems (personal communication, November 25, 2011).

City of Waterloo, ON & Ideological Barriers

The City of Waterloo banned backyard chickens in 2009; individuals keeping hens prior to this law were permitted to keep hens through a grandfathering clause (Animal Control By-Law, 2009). In response, Waterloo resident Matthew Bailey-Dick established the Waterloo Hen Association (WHA), to act as a local activist and advocacy group for the allowance of backyard hens in the City. In April, 2011, the City Council revisited the issue of backyard chickens in Waterloo (Outhit, 2011). To prepare for this decision, a two year pilot project was put into place to “test what the reality of urban hens would look like, and set a reasonable time frame to revisit the issue in 2011” (Bailey-Dick, 2011). Extensive effort was put into this decision, where City Council “listened to the public when asked for a cooperative by-law, gathered community input both for and against, received written submissions from scientists and vets, a Councillor where hens are permitted, and the Regulation of Public Health” (Bailey-Dick, 2011). At the same time, WHA gathered hen keepers in the City to discuss their experiences and make notes in order to put together a hen keeper’s resource booklet, as well as prepare workshops on hen keeping and plan a Waterloo chicken coop tour in 2010 (Bailey-Dick, 2011). The workshops provided education on hen

keeping and were led by two veterinarians (Bailey-Dick, 2011). The attendees were primarily the members of the WHA, as well as residents who were interested in being future hen keepers (Bailey-Dick, 2011). In 2010 and 2011, WHA hosted the Waterloo Chicken Coop Tour, which opened up five backyards with chickens (Bailey-Dick, 2011). In its first year, the tour attracted between 40-150 visitors, including CTV News and the KW Record newspaper (Bailey-Dick, 2011).

Despite the efforts of the WHA and other supporters – and what was regarded by many as a hugely successful pilot project – the City Council of Waterloo voted against lifting the ban with a 4-4 vote (Outhit, 2011). Concerns of neighbour complaints and the attraction of predators were the biggest influence in this decision, overruling the positive opportunities associated with urban hen keeping (Outhit, 2011). This decision by council reflect ideological barriers, rather than practical barriers to urban hen-keeping—as suggested above, many of the “practical” barriers, to hen-keeping are easily overcome.

Case Study: Vancouver, BC

Many cities in North America have taken on the initiative to allow backyard hens in urban areas including Niagara Falls, ON; New York City, NY; Victoria, BC; Seattle, WA; Burnaby, BC; San Francisco, CA; and Portland, OH (“The backyard chicken”, 2010; Levenston, 2009; Salkin, 2011). The City of Vancouver in British Columbia experienced similar concerns as Waterloo in the decision process, but has recently permitted urban hen keeping within the City.

Before hens were permitted in the City of Vancouver, many of the barriers discussed above were leading the discourse on urban agriculture. There were concerns as to whether urban livestock owners would have the knowledge and expertise necessary to care for the hens humanely (Levenston, 2009). In addition, the BC Poultry Association feared from the risk of avian influenza spreading to urban flocks, creating health concerns for urban residents (Levenston, 2009). In response, the City of Vancouver examined case studies within Victoria, BC, where urban hen-keeping has been allowed for many years (Levenston, 2009). The City created ‘best practices’ guidelines for hen-keepers to minimize animal rights and health risks. These guidelines outlined reasonable amount of yard and coop sizes and qualities (Levenston, 2009).

In 2010, the City of Vancouver passed the permit for backyard hens in urban areas (Weisgarber, 2010). Strict guidelines were created in the Animal Control By-Law (NO. 9150), including sixteen criteria outlining the regulations, proper hen care, and coop conditions required (Animal Control By-Law, 2011).

For instance, no more than four chickens can be kept at each household, and bird enclosures must be three metres from the nearest window or door and one metre from the property line (Weisgarbger, 2010). These criteria have been attached in Appendix B. To help control and minimize issues, The City of Vancouver created an online registry for residents who wish to own chickens (refer to Appendix C). As well, the Vancouver website provides government documents related to basic chicken care, proper coop and pen maintenance, bird health basics, and humane considerations for hen owners (“Backyard hens”, 2010). These resources and guidelines are free for anyone to use and learn from, encouraging proper care and reduced conflict in neighbourhoods between hen owners and their neighbours.

There is the possibility for keeping hens in cities if proper guidelines are created and the barriers are dealt with accordingly. The Vancouver City Council faced the same practical and ideological barriers to urban agriculture that the City of Waterloo has been faced with. The City of Vancouver has approved urban hen-keeping, and is experiencing many positive outcomes between both the owners and their neighbours (Thomas, 2010). There are minimal problems reported in Vancouver; those who currently own hens are satisfied and neighbours are supportive (Weisgarber, 2010). With proper guidelines and education, caring for hens should not be any more difficult than caring for a dog or cat. Issues that constantly arise in this conflict should be reconsidered (Bailey-Dick, 2011). A suggestion from one of our interviewees, A.C., was to know the City by-laws, find the support from neighbours, and be prepared for the time and long-term commitment associated with hen keeping before getting backyard chickens (personal communication, November 25, 2011). A.C. currently lives in the City of Guelph, which is a neighbouring city of Waterloo and permits urban livestock, including backyard chickens (“Animals and insects”, 2011).

With many of the barriers related to urban hens, there are also solutions. Most of these issues can be avoided if keepers are responsible and maintain proper standards for hen and coop care in order to reduce odour, pests, and health risks. Limiting the amount of hens per lot can significantly reduce the amount of noise. Vancouver has a maximum number of four hens per household, which is more than enough to provide eggs, fertilizer, pest control, as well as little noise. In terms of health concerns at small scale rearing, A.C. believes there is a higher risk in large-scale chicken farming, as chickens are kept in tight quarters (personal communication, November 25, 2011). The City of Waterloo should take the time to consider the opportunities associated with urban hen keeping, look into the success of other cities like Vancouver, and consider the solutions to the barriers related to urban hens.

2.3 Urban Honey Bee-Keeping

Honey bees (*Apis*) are thought to have developed over 55 million years ago, in the Cenozoic era. Since then different subspecies of honey bees have developed over time as a “result of geographical isolation caused by barriers of seas, deserts, and high mountain ranges, as well as changes in climate during the Pleistocene Era (Ice Age)” (Crane, 1999, p. 9). According to Readicker-Henderson (2009), the number of bee species is somewhere between 16,000 and 20,000 species, 7 of these species make honey (p. 23). *Apis mellifera* is the most common known honey bee species to North America, though it is not native.

The hunting of honey began 5 million years ago in the tropics, when the first humanoids (*Ardipithecus* and *Australopithecus* in Africa, and *Homo habilis* in Africa) evolved (Crane, 1999, p. 35). The “earliest known representations of bees and their nest” can be found in Palaeolithic paintings in the Cave of Altamira in Spain. There are 118 recorded sites of rock art relating to bees from 18 countries as of 1997. Honey was initially “hunted”, which describes the activity of “hunters who raided a bees’ nest when they found one and harvested honey combs from it, but did not own the nest or take steps to preserve the bees” (Crane, 1999, p. 43). Bees and bee hunting traditions vary all around the world (Crane, 1999; Readicker-Henderson, 2009).

“A single hive can make 150 pounds of honey over the course of the warm months; in cold climates, they’ll use a third of that to get through the winter, but in more temperate regions, they’ll hardly need any honey as a backup plan, as something is blooming all year round and there’s always food coming in (Readicker-Henderson, 2009, p. 74).

Opportunities

Honey is the most obvious reward of beekeeping; though not guaranteed every year, one hive can produce up to 45 kilograms of honey (“Urban agriculture business”, 2011a).

Honey, particularly urban honey has many benefits: first, honey provides a **local source of sugar**. Furthermore, it contains an “array of vitamins, minerals, amino acids and anti-oxidants, also has the advantage of being a much **healthier sweetener** than refined sugarcane” (Skelton, 2006, p. 15). According to the World Wide Fund for Nature (WWF), “sugar cane production is responsible for more biodiversity loss than any other crop worldwide” (Skelton, 2006, p. 15; “Sugar and the environment”,

2004). “The cultivation and processing of sugar produce environmental impacts through the loss of natural habitats, intensive use of water, heavy use of agro-chemicals, discharge and runoff of polluted effluent and air pollution” (“Sugar and the environment”, 2004).

Most importantly though, honey bees provide the services of **pollination**—“many cultivated crops do not yield seeds or fruit without cross-pollination of their flowers by pollinators such as honeybees and other insects” (Shrestha, 2008, p. 90; Tommasi et al., 2004). The Canadian Honey Council estimates the yearly value of honey pollination of crops at over \$2 billion per year (“Industry overview”, 2011). Significant crops include canola, blueberries and apples, which farmers will rent hives to pollinate. Crops that are well pollinated by honey bees can produce up to 2-8 times more fruit (Industry overview, 2011). The U.S. Department of Agriculture (USDA) states that 1/3 of the American diet comes from crops pollinated by honey bees (Johnson, n.d.; Shrestha, 2008). According to the Canadian Honey Council, there are “approximately 7000 beekeepers in Canada operating at total of 600,000 colonies of honeybees. The ratio of commercially operated bee colonies to those owned by hobbyists is 80:20” (“Industry overview”, 2011).

“In a good, productive area, it takes over 50,000 miles of flying and the bees visiting more than two million flowers to make a single pound of honey... The average worker bee, before she drops dead of sheer exhaustion, her wings nearly torn from the friction of air as she flies up to sixty miles per day, will contribute roughly one-twelfth of a teaspoon of honey to the hive” (Readicker-Henderson, 2009, p. 67).

Practical Barriers

As with hen-keeping, there are many technical barriers to the keeping of bees. **Start up costs** would be the largest barrier for many people. Survey participant K.S., stated that just under \$1,000 to purchase their hive and the tools required to operate it, such as hive tools, protective gear, a smoker, and the 20,000 bees required to establish the colony (K.S., personal communication, November 22, 2011). Furthermore, a permit must be purchased from the Ministry of Agriculture. Once the “start-up” equipment is purchased, beekeeping becomes less expensive, costing approximately \$300 per hive according to another survey participant, K.C. (K.C., personal communication, November 26, 2011).

Another technical barrier could include **high hive densities**. The New York City Beekeepers Association warns people to “closely observe their apiary locations to determine the carrying capacity of the area--both the immediate area and roughly three miles in all directions--and to limit the number of hives accordingly. Signs of over-saturation in an area include slow colony growth, poor honey production, and excessively defensive behaviour” (“New York City”, 2010). When asked whether or not there can be too many hives in a city, K.C. responded that it was possible, but it is unlikely. He suggested that the Region of Waterloo only has a handful of hobby beekeepers, and maybe a few commercial ones (K.C., personal communication, November 22, 2011). There also may be concerns with honeybees competing with other bee species that require pollen and nectar--a study in Vancouver, B.C. identified 56 bee species, including the honeybee (Tommasi et al., 2004).

Colony Collapse Disorder (CCD) may be another barrier to honeybee keeping in the City of Waterloo. In 2006 beekeepers in the United States noticed declines in honey bee colonies. “Because of the severity and unusual circumstances of these colony declines, scientists name this phenomenon colony collapse disorder” (CCD) (Johnson, n.d., p. 2). There is still no consensus on what may be causing these collapses: an number of possibilities include pesticides, a new parasite or pathogen, changes in diet (overcrowding, pollination of crops with low nutritional value), or “a combination of existing stresses that may compromise the immune system of bees and disrupt their social systems, making colonies more susceptible to disease and collapse” (Johnson, n.d., p. 2; Kevan et al., 2007; Readicker-Henderson, 2009). According to a publication from the Organic Agriculture Centre of Canada and the Canadian Honey Council, no confirmed cases of CCD have been reported (Kevan et al., 2007). Canada does experience more winter losses, which is a fourth technical barrier to beekeeping (Kevan et al., 2007). Beekeeping may not be a viable option for all regions of Canada.

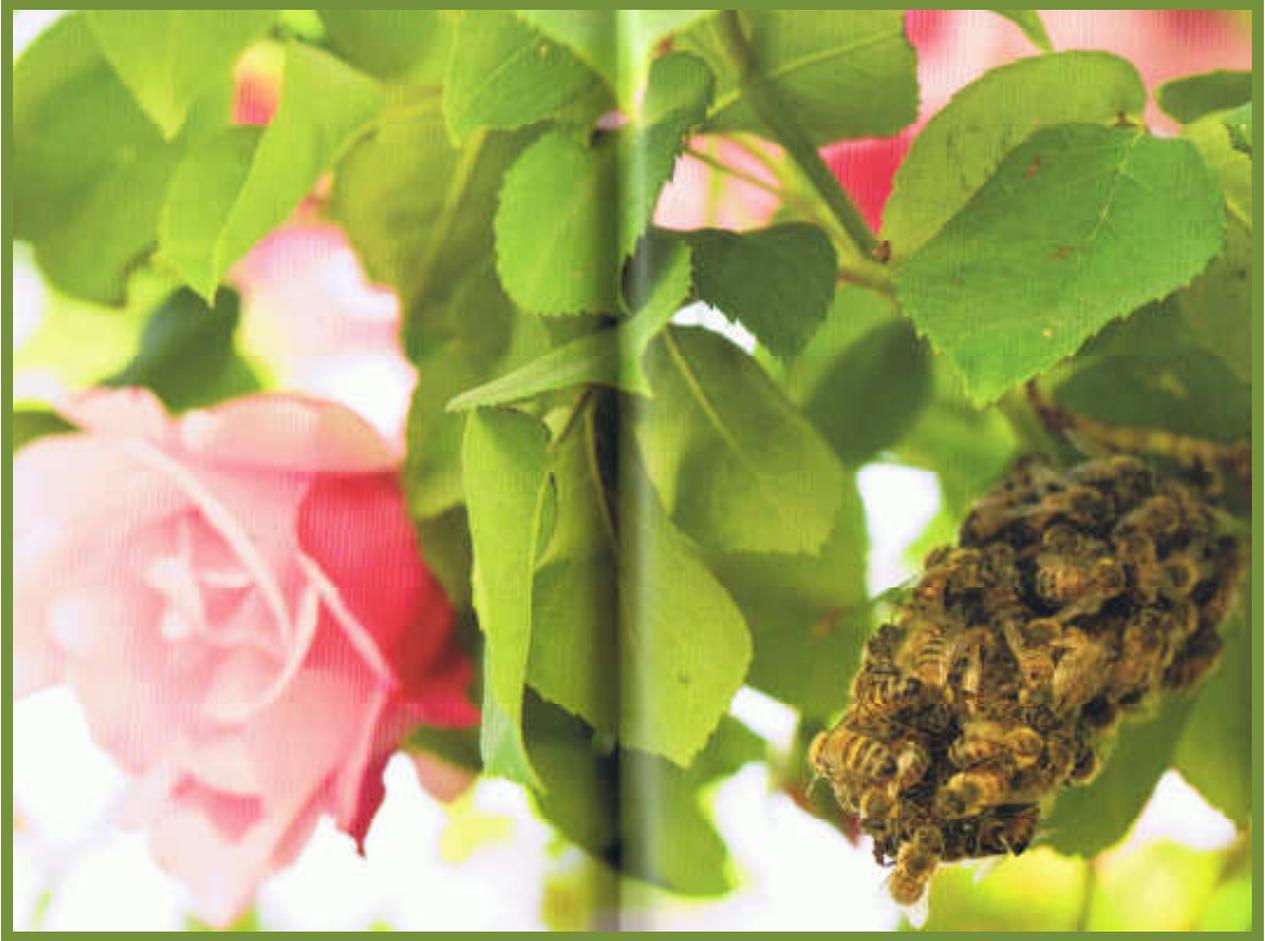


Figure 2. Bees swarming on a rose bush. (Readicker-Henderson, 2009: 102-3)

Ideological Barriers

The prominent barrier to urban beekeeping lies in the many **misconceptions** about the honeybee. There is a lot of un-scientific literature that suggests that misconceptions are an enemy of the honeybee (along with mites and and CCD) (Linda, 2007; Mumms & Mumms, n.d.; “No, they’re not”, 2010; Readicker-Henderson, 2009). Honeybees are often groups with other stinging insects such as wasps or hornets which are much more likely to sting people than the honeybee. While wasps and hornets both act as important pollinator species, they also scavenge on dead insects and fallen fruit, which makes them much more interested in a picnic spread or fruity beverage. Honeybees on the other hand, only require water, nectar and pollen (Mumms & Mumms, n.d; “No, they’re not”, 2010). Furthermore, “unlike hornets, which can sting repeatedly, a bee can only sting once, and for an average honey bee, it takes a goodly amount of provocation before she’ll even think of stinging, especially if she’s not anywhere near the hive... A bee at a distance from its hive never volunteers and attack...” (Readicker-

Henderson, 2009, p. 99). Interviewee K.C. stated, “Honeybees are not interested in stinging people. People are scared of a different kind of bee” (K.C., personal communication, November 26, 2011).

The **fear** of **swarming** and of **Africanized honey bees** create another ideological barrier that communities must overcome if beekeeping becomes more popularized in urban centers. Readicker-Henderson (2009) blames Hollywood for popularizing the fear of bee swarms. Swarming is a natural part of a hive’s life cycle. “It occurs when half the colony departs the hive with a queen to create a new honeybee colony” (“Food policy”, 2011). Swarms can be intimidating, especially if one has not seen one before. Still, swarms are not particularly aggressive (“Food policy”, 2011; Readicker-Henderson, 2009). Interviewee, K.S., experienced a swarm in her first year of beekeeping. She stated that while the experience was a little intimidating, they were able to deal with the swarm (personal communication, November 22, 2011). Interviewee K.C., who operates 10 hives at 3 locations stated that “swarms can be managed” (personal communication, November 26, 2011). The City of Vancouver states that both “The Provincial Apiculturist and Apiary Inspector are both accustomed to handling swarms and also keep a “swarm list” of other local beekeepers who will manage swarms in their neighbourhoods” (“Food policy”, 2011).

Africanized honey bees (*Apis mellifera scutellata*) are a breed of honey bees released in Brazil while trying to create a superior version of the honey bee, which was stronger and produces more honey than the traditional honey bee. Tanzanian queens, from a strain of honey bees “known to be more aggressive..., even when attaching” were brought to Brazil for cross breeding purposes (scientists wanted to combine the strengths of the african honeybee and the traditional honeybee) and were accidentally released (Readicker-Henderson, 2009, p. 106). According to Readicker-Henderson (2009), Africanized honey bees tend to swarm more frequently, and are more easily provoked into attacking. Africanized honeybees, while establishing themselves in much of the southern United States, are currently unable to withstand the cold temperatures of the northern states and Canada. Still, the introduction of the Africanized honeybee (which can be identified and kept out of hobby and commercialized hives), has led to further persecution of honeybees and hives across the United States (Readicker-Henderson, 2009).

Neither beekeepers interviewed in this study received strong opposition to their beekeeping activities. That being said, K.C. bee-keeps outside of city limits, on the properties of three farmers (personal communication, November 26, 2011). K.C. provides the farmers with honey in exchange for the use of their properties; the farmers acknowledge the pollination services that the bees provide. K.C. has notice

throughout his years of beekeeping that while everyone wants to help the bees, there are very few who want them nearby (personal communication, November 26, 2011). When asked whether or not he saw urban beekeeping as feasible for the average person, K.C. stated that he did not see a problem with the possibilities of urban beekeeping (personal communication, November 26, 2011). K.S. on the other hand, does keep bees within an urban environment, though on a rather private lot. She began beekeeping with a community of neighbours (6 adults) who were all interested in keeping a hive. K.S. stated that many people were shocked; one person thought it was the “worst idea ever” and thought they would get sued for someone being stung and dying (personal communication, November 22, 2011). On the whole though, K.S. felt that most people were “super” supportive (personal communication, November 22, 2011).

Urban Beekeeping

Technically the art of beekeeping can occur wherever there are flowers that can be foraged for nectar and pollen. In Ontario, beekeeping is regulated by the Ontario *Bees Act* (1990). The *Bees Act* (1990) outlines any regulatory requirements for beekeepers in Ontario, such as the species (*Apis mellifera*), certification, transportation, and location requirements. All beekeepers, for example, have to obtain a certificate of registration from the Provincial Apiarist (*Bees Act*, 1990, p. 21[1]). Location requirements states that: “No person shall place hives or leave hives containing bees within 30 metres of a property line separating the land on which the hives are placed or left from land occupied as a dwelling or used for a community center, public park or other place of public assembly or recreation” (*Bees Act*, 1990, p. 19[1]). This regulation would, of course, make any sort of beekeeping in urban environments rather difficult.

Web-based literature from beekeeping associations suggests that there are a lot of “renegade beekeepers” that keep bees on lots that are “too small” (“Beekeeping”, 2011). Furthermore, as the Canadian Honey Council states, “some cities allow beekeeping, some ignore it, and others have bylaws that restrict or ban the activity” (“Beekeeping”, 2011).

City of Waterloo, ON

As it stands, the City of Waterloo has no bylaws specific to beekeeping within city boundaries. Instead, the regulation of bees might fall under the Property Standards By-law 2010-095, which regulates the “maintenance and occupancy standards that apply to all properties in this city” (“Property standards”,

2011). The City may classify honey bees as “pests” and as “undesirable materials”, which include “injurious insects, termites, rodents, vermin and other pests” (Property Standards By-Law, 2010, p. 7). According to Part 5.1.1 of this bylaw, “Yards shall be maintained free of any undesirable material” (Property Standards By-Law, 2010, p. 9). The property Standards Bylaw applies to all properties in the City (Property Standards By-Law, 2010, p. 8). Yet, because the province does not classify the honey bee as a pest, it is possible that the City simply has no formal stance on honeybees beyond the provincial regulations (*Bees Act*, 1990).

Case Study: Vancouver, BC

While urban beekeeping may not be a common (or legitimate) enterprise in the City of Waterloo, there is precedence for it in Ontario and around the world. As with hens, the City of Vancouver has a rather progressive policy on urban beekeeping. In 2005, the “Food Policy staff team presented a report to City Council, that requested an amendment to the Health Bylaw to allow for hobby beekeeping within the City of Vancouver” (“Food policy”, 2011). This report suggested that because of the city’s promotion of a just and sustainable food system, hobby beekeeping should be permitted within city limits. The report suggested that, “Urban beekeeping can contribute to pollination, and better harvests in backyard, street, rooftop, and community gardens. By contributing to pollination of City gardens, urban beekeeping is an important complement to urban food production and to the City’s sustainability goals” (“Policy report”, 2005, p. 7). The document included proposed guidelines for the urban beekeeping, and when the City amended the bylaw, it published a set of *Hobby Beekeeping Guidelines* (“Policy report”, 2005; “Food policy”, 2011).

Urban beekeeping also occurs in Toronto, ON; New York City, NY; Chicago, IL; and San Francisco, CA (K.C., personal communication, November 22, 2011). As the Toronto Beekeepers Co-operative writes it, “With over 50% of the world’s population now living in cities it is important that city-dwellers learn about nature’s most prolific pollinator, the honeybee, and the vital role honeybees play in our food security, ecosystems and environment” (“A short history”, 2011). Toronto’s popularized beekeeping scene began in 2001 with the establishment of 3 hives at FoodShare, an Urban Agriculture program founded by previous Toronto Mayor Eggleton at 200 Eastern Avenue. As of 2011 TBC membership grew to 60 members, including significant Toronto destinations such as Evergreen BrickWorks, the Fairmont Royal York Hotel, and the Toronto Botanical Garden (“A short history”, 2011). The Toronto Beekeepers’

Association attributes its rise in popularity to growing awareness of environmental concerns associated with long, displaced food chains.

New York City lifted its ban on beekeeping in April 2009, and urban beekeeping has since exploded in the city. The New York City Beekeepers Association (NYCBA) has since published best management practices for safe urban beekeeping, which encourage beekeepers to manage their bees responsibly so as to not create problems for neighbours (“New York City”, 2010). The White House even has honeybees; in 2009 Michelle Obama arranged to have 2 bee hives added to the White House’s vegetable garden (Flottum, 2009).

2.4 Goats



Figure 3. An Alpine-mix dairy goat. (Cann, 2011)

Domesticated some 10,000 years ago, goats are one of the earliest animals to have lived alongside human communities. As a cultural icon, goats are long considered “louche[s] and immoral” (Kessler, 2009, p. 29), a characterization that may arise from their intelligent, frequently trouble-making behaviour, as well as the ram’s high-testosterone displays in times of rut. Along with sheep, goats played a crucial role in the development of the first agricultural and pastoral civilizations that once dominated the globe (Kessler, 2009). As an initial inspiration for the Greek god Pan, who gradually gave way to Christian visions of Satan, goats are not typically considered with much affection.

Yet in other areas across the world, especially Africa and Asia, goats are still deeply integrated elements of urban foodscapes. With a “sheer ability to thrive in harsh environments, and to be productive on meagre feeds” (Devendra, 1999), goats can flourish under a wide range of conditions. For many urban poor in the Global South, goats provide the “basic insurance for agricultural activities, food and economic security, and stable households” (Devendra, 1999); providing everything from meat, dairy product, waste disposal, social value and even recreation. As women and children are frequently the most vulnerable to extreme poverty, goat keeping is also relevant in strengthening women’s rights - not only through economic empowerment, but allowing for increased self-confidence and social standing as well (Peacock, 2005).

Very little material exists on the opportunities and barriers facing urban goat rearing in Canada, the United States and other developed nations. While readily hailed as a key element of small-scale urban homesteading (Kessler, 2009), interest in urban goats (like most urban livestock) is still very much undeveloped.

Opportunities

Urban goat keeping provides families and communities with ready access to **fresh milk, cheese, yogourt,** and **ice cream** – an accessible alternative to conventional, industrially produced dairy products (Asty, 2008). A range of concerns have prompted growing interest in home dairying: issues of animal welfare, product quality and health impacts, perceptions of the presence of antibiotics or hormones in milk, and the environmental impacts of industrial dairy operations are all perceived complications arising from traditionally-store bought milk, even with organically certified brands. Home dairying allows for **personal control and knowledge of where milk is coming from**, and decreases anxiety surrounding these unknowns (K.D., personal communication, October 25, 2011). Recorded goat milk production has more than doubled since 2007, with 30 million litres collected from 260 farms in 2010 (Vyhnak, 2011), indicating a rising interest in goat milk as a cow dairy alternative. With smaller fat globules than cow’s milk, goat dairy can be much easier for human bodies to digest – a potential evolutionary nod to the far greater length of time goat’s milk has been consumed by humans, as opposed to cow’s (Kessler, 2009).

While urban goat keeping is frequently framed as this “freedom from”, it also entails vivid “freedom to’s” – consistent with findings on home dairying literature based out of the global south. These range from the pleasures of animal companionship, learning opportunities for children and youth (Blecha, 2007), access to meat for sale or personal consumption, milk used for soap-making, the fostering of

connectivity within the local community (Bryld, 2003; Devendra, 1999; Peacock, 2005) and even an increased appreciation for motherhood and breastfeeding (Blecha, 2007). In this way, urban goat keeping aligns itself with broader thematic concerns of “local” agriculture, a sense of reconnection with genuine food sources people are able to engage with directly (K.D., personal communication, October 25, 2011). The possibilities for urban goat keeping become a wider issue of self-sufficiency and political engagement. As one goat supporter remarked, “When goats are legalized, people are able to opt out of our food production system run afoul” (Grant, 2011).

Practical Barriers

As with hens, many technical barriers to urban goat keeping arise from complications with tending, cleaning and providing shelter for goats. Renowned escape artists, goats (even smaller mini-varieties) require fences four to five feet high. This would prove especially important in an urban setting, where an escaped goat could be injured, damage property, and generally attract unwanted attention. With a recommended space of 400 square feet, goats also require shelter from the elements, with a minimum 6 X 8 foot space for two goats (Grant, 2011).

In the Northern Hemisphere, goat does are bred in the autumn. With a gestation period of five months, does give birth by early spring and frequently produce twins or triplets. Following birth, does are typically milked twice a day on 12-hour rotations and kids bottle fed, or alternatively milked once a day with kids free-feeding during the day, then separated at night (K.D., personal communication, October 25, 2011). Most goats produce at least an average two litres of milk a day, with mini-doe varieties slightly less. As ruminants and foragers who consume a wide range of greens – trees, shrubs, grasses, and weeds, including many invasive species – goats are well-suited to a diverse urban landscape. Besides fresh browse, goat diets are typically supplemented with hay and grain, particularly in the case of lactating does.

Besides **housing and feed technicalities**, it can be easy for those new to home dairying to forget that in order to produce milk, **female goats must be bred and bear kids**. Home-dairies need access to breeding rams housed beyond city centers, and must also come to terms with methods for dealing with excess kids – re-homing, castration of male kids, or butchering of excess kids for meat. As one author puts it, “...dairy comes with death. You can’t eat an ice cream or enjoy a latte without killing animals. All those unwanted boy calves, lambs and kids inevitably end up butchered” (Kessler, 2009, p. 154). While the majority of people consume dairy, the byproducts of dairy practices may be difficult for people to

contend with up-close. **Animal death**, and the raising of livestock for home meat, is a critical food security issue. While beyond the scope of this paper, end-of-life plans for animals – and how and where those plans are carried out – will be a next large debate in urban food sovereignty issues.

Beyond housing structures and issues surrounding breeding and lactation, other practical considerations include **manure disposal**, feed, **access to appropriate veterinary services** and consideration of daily **time commitments** (including daily milkings). As with any new animal, potential owners should spend time familiarizing themselves with goats' needs - and most will find that caring for goats and establishing milking routines is similarly intensive as owning large dogs or other conventional pets (Grant, 2011).

Other technical issues arise when considering the administrative costs for creating and running goat licensing systems, and other regulatory structures.

Ideological Barriers

While technical considerations may seem daunting, ideological resistance - what is viewed as normal or acceptable in urban contexts - to urban goats is a much more profound underlying issue. With this in mind, livestock rearing also becomes an act of political engagement – and resistance to social norms perceived as inhibiting food security (K.D., personal communication, October 25, 2011).

While this is true for all urban livestock, goat keeping presents a unique ideological hurdle: the issue of **raw milk**. With a long history of contention in Ontario, raw dairy is illegal to sell, offer to sell, distribute or deliver, and widely condemned as entirely unfit for human consumption (“Questions and answers”, 2009). Michael Schmidt, widely known raw-milk advocate and dairy farmer based out of Durham, Ontario, was recently found guilty of 15 out of 19 charges related to distribution of unpasteurized cow's milk (Leeder, 2011). Home-dairying may be discouraged even more so than urban hens or apiaries because of the unique challenges unregulated milk production presents legally.

For animals raised in nineteenth century American and Canadian cities – where dairy cows were routinely kept in squalid conditions and fed materials like hot distillery wastes – pasteurization was one way of ensuring that poor-quality milk could no longer lead to infectious disease outbreaks (Kessler, 2009). This especially became true as milk began being trucked further and further distances to reach consumers. Raw milk proponents claim multiple health benefits of the unpasteurized liquid: alive with microorganisms, pasteurization – heating milk to at least 151 degrees Fahrenheit, and holding it there

for 15 seconds – destroys beneficial ingredients and turns milk into a dead thing (K.D., personal communication, October 25, 2011).

Conversely, the supposed health benefits of raw milk find little support in academic literature, larger dairy organizations or public health advocates. John Sheehan, director of dairy safety for the Food and Drug Administration of the United States, says “that the agency has thoroughly examined the claimed health benefits and no support for any of them” (“Arguing over unpasteurized”, 2010, p. 37). However, the question of small-scale farms providing dairy exclusively to local areas may not likely belong in the same discussion as large-scale industrial operations, supplying milk to distant consumers. As author and goat-keeper Brad Kessler remarks,

“In a tiny operation like our own, there’s no need to pasteurize the milk. We know beforehand if a doe is sick, and the quality of the milk is obvious because it sits right beneath our noses... the farther milk has to travel from the teat, the greater the chances it can degrade... all this argues for a local source: an animal and a farmer one actually knows” (Kessler, 2009, p. 164).

Regardless, **pasteurization** is a readily performed stovetop procedure that could easily be implemented in urban households. It does remain likely, however, that many home dairies would continue consuming and covertly distributing raw milk products – a contentious issue many municipalities may wish to avoid altogether.

The broader issue of whether people have “the right to consume whichever food products they choose” (Leeder, 2011) betrays underlying ideological barriers to urban goat integration, and even to urban farming in general, a symptom which points to deeper underlying issues of a dysfunctional food system. Sealed milk in a paper box is taken for granted as “safe”, “clean” or “healthy”, despite being part of a long and tenuous chain of food commodification. Fresh warm milk, alternatively, is viewed with inherent mistrust and suspicion. This “**institutionalized edibility**”, as PhD candidate Michelle Coyne called it (Coyne, 2010), is symptomatic of a disconnected food culture which leaves decision-making on what is acceptable to consume (and what isn’t) in the hands of “experts”. This latent notion of food as dirty which hasn’t undergone industrial processes might be the greatest barrier facing the integration of goat home dairies in Waterloo, and situates urban goats within a wider context of food reskilling as people regain personal knowledge on how and what to consume. If city-dwellers routinely produced their own

food, or sourced food from neighbours and peri-urban sources - a far stretch from Waterloo's contemporary food systems, composed of complex lines of production and distribution spanning the globe, it seems likely that the issue of raw milk would not actually be an issue at all.

City of Waterloo, ON

Like hens, goats are considered farm animals and are illegal to own on areas not zoned agricultural (Animal Control By-Law, 2009). While project primary research sought to locate illegal goat owners to gather their perspectives on opportunities and barriers facing livestock integration, no contacts were found. Despite this, it does still seem likely that under-the-radar home dairies may already exist throughout the city. News stories from across Canada document rising trends of illegal goat owners who - despite the laws - are insistent in their right to control their own dairy sources (Leung, 2010).

The City of Victoria, for example, is beginning to explore the potential costs of preparing a full report on goatkeeping within the city. Phillippe Lucas, the counsellor who put forth the motion, emphasized the food security benefits of goat keeping (Hemlan, 2011). One illegal goat owner in North Saanich, British Columbia remarked in an interview last year, "Our goats are like somebody else's dog... they're very bright animals. They're very personable and they enjoy people as well. ...They're a lot of fun for us, and of course, they're very useful" (Leung, 2010). The same owner, who has been raising goats for 14 years, went on to explain that with the low start-up costs of raising goats, she's saved a great deal of money and her family has benefited from consuming their own raw milk (Leung, 2010).

Case Study: Seattle, WA

Seattle, which legalized urban goats in 2007, in the United States, provides an example of adaptive policy which was changed to allow goats within city limits. While previously designated as "farm animals", goat advocates successfully had them re-classified as "small animals" when investigations into health and safety issues found risks to be "very minimal" (Chan, 2007). Spearheaded by previously law-breaking goat owner Jennie Grant and the "Goat Justice League" which she created and continues to lead, Seattle's changed laws are a successful example of progressive policy adaptations that increase local food security. Council member Richard Conlin sponsored the changed law, which was voted through council with full approval (Chan, 2007). Concerned views - over goats escaping their pens and destroying gardens, unsightliness, and worries about potential smells - were apparently far less common than support for the mini-goats' legal integration into the city (Chan, 2007).

After a neighbour four blocks away from Grant complained to the city, Grant was visited by The Seattle Department of Planning and Development and ordered to get rid of her two mini-goats. As described in a recent Globe and Mail article, after spending a year “gathering signatures, pouring over old city livestock laws, researching what's involved in goat ownership, and even hustling a baby Nigerian goat into the courthouse, she won her fight” (Burnett, 2011). The new designation, which recognizes that the earlier farm animal description was “culturally biased” (Grant, 2011), is regulated under Seattle laws and contains specific stipulations meant to address most commonly found concerns and issues arising from urban goat ownership:

1. Before considering getting goats, check applicable local regulations to find out if they can legally be kept where you live. In Seattle, the number of goats and other animals that can be kept varies by lot size; see Seattle Municipal Code (SMC) 23.42.052 for specific regulations. Other requirements for goat ownership are governed by sections of SMC 9.25.
2. Only pygmy, dwarf and miniature goats may be kept in Seattle. They must be dehorned and male goats must be neutered. Annual licenses are required. For information on licensing costs consult the Seattle Animal Shelter at (206) 386-7387 or online.
3. Goats in Seattle must be kept on the owner's property except for purposes of transport or when on other property with the permission of a lawful occupant of that property.
4. Ordinances in cities other than Seattle will vary - consult your city offices for more information. In unincorporated King County, animal-related regulations can be found in Chapter 21A.30 (“Private goat ownership”, 2011)

As of 2010, some 150 documented goats were owned in Seattle (Chan, 2007). As part of structural supports to ensure their successful integration, Jennie Grant and the Seattle Goat Justice League offer workshops on urban goat keeping, and also operate an informative website. Seattle’s goat website also offers a broad overview of goat care and home dairy best practices, as well as linking to a range of other information on the internet. Following the Goat Justice League’s success in Seattle, numerous other “Goat Justice Leagues” have appeared across the United States (Burnett, 2011).

In summary, a review of popular and non-government organization literature indicates a rising interest in urban goat keeping and home dairies (Lee-St. John, 2009). Even in many rural locations across the province, does suitable for home-dairies are in extremely high demand (K.D., personal communication October 25, 2011). The legal implications of keeping goats, and highly contentious raw milk politics, may be slowing down serious municipal consideration of incorporating goats into city visions for food security.

3.0 Discussion & Research Findings

Research Findings

- Urban livestock rearing is becoming increasingly popular throughout Canada and North America: people are excited to realize the potentials of rearing their own chickens, bees or goats (as well as other livestock) in urban settings, and regain a sense of connectivity to their food systems
- A highly diverse web of non-governmental organizations, civil-society groups and individual urban livestock enthusiasts are actively pushing for livestock integration, with a wide spectrum of focuses and techniques.
- For all three animals, unfamiliar animal husbandry is a daunting practical challenge.
- Other integration concerns – health and safety risks to humans, impositions on convenience (smells, noise, unsightliness), the potential for damage to private property – are also consistent between hens, bees and goats.
- While practical issues of animal husbandry and other concerns seem most important on a surface level, they collectively indicate how ideological stances – what things are most valued, what practices are considered normal or not – present the greatest barrier to urban livestock integration.
- Municipal and provincial policies, while theoretically supportive of food security and urban agriculture, infrequently follows through with this in practice.

Industrial agriculture, in many respects, is no longer a functional means of supplying food for quickly growing and urbanizing human populations. As outlined previously, a system which relies on sameness and transportability of products as main points of desirability also presents a vast array of biophysical, economic, and social stumbling blocks to environmental and human well-being. Urban agriculture – in being community-centric and environmentally-based – acts as an alternative to oppressive industrial systems based on outdated economic models. Food, as an indisputable need for all living things, and a deeply social human ritual, is an ideal starting point in questioning pervasive power hierarchies that are based less on health than they are profit and reproducing existing power dynamics.

Along this line of thought, research exploring hen-keeping, apiaries and urban goats in the city of Waterloo indicates that practical barriers are not the main issues at hand. Deep-seated ideological and cultural resistance presents especially complex challenges to urban livestock integration. In this respect, resistance to urban animal use is based more in perceived threat than actual issues that may challenge human health or convenience. This underlying barrier is rooted in contemporary society's collective understanding of social norms, the unstated agreements of what happens, and how. Our research suggests that as small urban farming initiatives continue to form, minor policy changes will be made, food security issues will more and more broadly enter public discourse and urban livestock integration will increasingly be normalized. The Waterloo Hen Association and the Waterloo Region Food System Roundtable represent organizations working to support these small urban farming initiatives while advocating for policy changes. Both groups, and others with similar goals, should perhaps follow the example of our Vancouver case-study in the case of hens and bees, and continue to advocate change on the grounds that the City's official plan dictates a desire move to a more sustainable, local and healthy food system.

In addition to making explicit these ideological barriers and the need for political, institutional change, our research also suggests that for urban agriculture, the way forward is through adopting a holistic, multi-disciplinary approach to changing societal norms: understanding social discourse through wider psychological, economical, anti-oppressive and political frameworks for genuine problem solving.

In summary, the first barrier to overcome is how urban agriculture is perceived. Urban agriculture needs to be recognized as a means to food security that can be easily achieved and is fully scalable. Further, it should be recognized as a way of knowing exactly where food has been, as the supply chain is so much shorter. The second barrier is taking this perception and applying it to politics, demanding that urban agriculture be permitted and subsequently adopted as a sustainable method of food production that can take a role in long term food crisis buffering. Once the practice is permitted, the third and final barrier is training individuals and groups on how to practice urban agriculture responsibly and humanely – and how it fits into a broader context of social consciousness.

“Finally milking my own goat was a transformative experience. The daily routine of connection with another living creature – from the quiet mornings together to frantically chasing her out of the vegetable patch – contributed to my deep understanding of the ways our two species had been inextricably linked for thousands of years. A relationship was formed. And as I learnt to handle the precious milk, making and sharing real yogourt, raw soft cheeses, fresh ice cream, the genuine tragedy of our industrial capitalist food system hit me: that as a people, collectively, we’d been convinced that not only were pursuits such as these unnecessary for the average person, but actually impossible”

- Heather Cann

4.0 Conclusion

Urban and peri-urban agriculture is a method of growing crops and raising livestock that is practiced around the world. It provides an excellent means of securing fresh food for urban centres, making them more sustainable and less vulnerable to disasters or interrupts in the production chain of industrial food. Urban agriculture’s inherent biodiversity makes it less sensitive to disease and pests.

In the Global South, urban agriculture is standard practice for some countries, though to many it is now a lost art as countries have come to rely increasingly on oil-intensive industrial food to sustain them. Some countries, like Brazil, have resisted this change by promoting local food growing initiatives and maintaining high trade tariffs on food to encourage domestic markets.

In the City of Waterloo, the municipality supports urban gardening but is against any increase in urban livestock rearing. The keeping of hens was recently, in 2004, banned such that previous hen keepers cannot increase their flock, and there cannot be any new hen keepers. The policies on bees are somewhat ambiguous; if they are deemed undesirable material or injurious insects, they can be banned. If not, they are expressly permitted by the *Ontario Bees Act* of 1990. Goats are banned outright, though the Seattle case study has demonstrated the usefulness of the animals both as providers of milk and sustainable land clearing and fertilization.

4.1 Recommendations

The “need for tailor-made solutions” (Schiere et al., 2006) becomes clear when considering the various levels of challenges that urban livestock integration faces. Barriers to urban agriculture including livestock, while stemming from a myriad of sources, can largely be traced to ideological issues and social perceptions. As small urban farming initiatives continue forming, minor policy changes are made and food security issues more broadly enter public discourse, livestock keeping will likely become normalized. Along with this more passive “trickle-down” approach, active programs of public education and pushing for the viability for livestock integration in Waterloo would also be an imperative element for changing societal norms. Looking to recent large-scale shifts in societal norms - from cigarette smoking to civil rights - reminds us of the potentials for rapid large-scale change to occur. Government and NGO support, local community organizations and other institutional support all have a role to play. Educational materials help bring possibilities for livestock integration to urban audiences, who might never have considered raising their own chickens, bees or goats possible.

Artist Joe Wirtheim, for example, creates posters reminiscent of WW2 era “Victory Garden” propaganda - both playfully informative and a reminder of the historical role urban farming once played. Examples of these posters can be seen in Figure 1.



Figure 4. Artist Joe Wirtheim's WW2 era "Victory Garden" posters (<http://victorygardenoftomorrow.com/about.html>)

4.2 Future Research

There is room for further research on a number of fronts. Urban agriculture provides an entry way for increased social consciousness and engagement in ones community. In this way urban agriculture is a gateway for transformative change that goes beyond the introduction of livestock into urban environments and instead recreates global food systems and community experience.

There should be:

1. Continued discussion with legal and illegal urban livestock rearers from within the City of Waterloo, and other cities in Ontario.
2. Further research into Global North experiences with urban agriculture outside of North America, such as experiences in Europe and Australia.
3. Further research into provincial policy that might lend itself to a vision of Ontario that includes urban agriculture, as well as investigation of municipal and regional council minutes and/or staff reports regarding the current urban livestock debate.
4. Further efforts to address the heart of each urban-myth associated with the "practical" barriers to urban agriculture in a way that uses less heavy jargon then the current "Information Bundle" provided by the Ontario Ministry of Agriculture and Rural Affairs.
5. Promotion of active partnership between government, non-governmental, and civil society groups on food system issues.

Furthermore, the current urban agriculture discussion has a private-property focus. We suggest shifting the focus to a community garden type approach that would provide public space for livestock integration.

4.3 Limitations

1. **Survey sample size.** Because no urban livestock rearing activities are permitted in the City of Waterloo, it was very difficult to find individuals to interview. Matthew Bailey-Dick of the Waterloo Hen Association was contacted with the hopes that he could provide us with answers to our questions, as well as, contact information for other urban hen-keepers. Additionally, the provincial apiarist for Ontario, Paul Kozak, was contacted to no avail. There was the possibility that Kozak could have been able to offer "snowball" contacts for interview purposes. Urban goat-keeping is definitely not a common phenomenon. Initially there was some interest in

discussing urban goat keeping, but likely due to that rogue nature of urban goat keeping, did not receive any follow up comments. We tried to compensate for this small sample size by consulting non-scientific sources such as personal websites, blogs, and newspapers.

2. **Time constraints.** Our survey sample size was limited by time constraints. After giving potential interviewees time to respond to our emails, there was little time for follow up inquiries. Also, it would have been interesting to build relationships with several urban farmers, to visit some backyard coops or hives, and to experience caring for the livestock ourselves.
3. **Interpreting Acts and By-laws.** Acts and By-laws are presented in a technical jargon that is not easy to understand on first encounter. To properly present this material in the report, experts on the Acts and By-laws should have been consulted where necessary.
4. **Broad focus of the study.** The focus of this study was far too broad, which made it very hard to synthesize all the roots causes of the issues at hand. Tackling each type of livestock (hens, bees and goats) separately might have been a more useful approach. Our report and interviews should have focused on one type of livestock, from a variety of angles. For example, we could have tried to find people on either side of the urban hen issue.

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Appendix A:

Excerpt from the Region of Waterloo's official plan ("Regional official plan", 2010)

Chapter 1 1.B Vision for a Sustainable and Liveable Waterloo Region

In keeping with Regional Council's Corporate Strategic Plan, the vision of this Plan is that "Waterloo Region will be an inclusive, thriving, and sustainable community committed to maintaining harmony between rural and urban areas and fostering opportunities for current and future generations". This vision embraces sustainability and liveability as central concepts and provides the foundation for the policies and future actions set out in this Plan.

A Sustainable Waterloo Region

A sustainable region is one that is robust, resilient and strives to live within its natural limits. Economic growth and prosperity are acknowledged as being fundamental to sustaining a high quality of life, but not at the expense of the other components of a sustainable community. For Waterloo Region to be such a community, the four related elements of sustainability – cultural, economic, environmental and social - need to be balanced.

From a Regional perspective, achieving the cultural element of sustainability includes fostering a strong sense of place and community identity by preserving elements of the past, providing new opportunities for cultural expression and supporting quality urban and rural design. Providing appropriate community infrastructure and physical infrastructure and services to support a diverse and growing economy ensures that the regional economy continues to develop in a sustainable manner.

From an environmental perspective, sustainability means maintaining, enhancing and even restoring the natural environment. It also means developing a culture of conservation to protect, enhance and wisely use the valuable natural resources for current and future generations. Finally, social sustainability involves building cities and towns as complete communities, which provide for the needs of all residents, foster social equity, inclusion and collaboration, and encourage healthy lifestyles. This Plan has been prepared from the perspective that the key to achieving and maintaining sustainability lies in the Region and its partners embracing a sustainability ethic, or set of values, which consistently inform and direct day-to-day actions and decision-making.

A Liveable Waterloo Region

Waterloo Region also needs to be a liveable community that is well-designed, accommodates people at all stages of life, offers a variety of employment opportunities and provides easy access to shopping, health care, educational, recreational and other services to meet daily needs. One of the key ways to achieving liveability is by taking steps to ensure that, wherever feasible, Waterloo Region develops as an integrated, compact and mixed-use community. Liveable communities also have a distinct sense of place and character with which people closely identify, and which sets them apart from other communities. This Plan recognizes that "place matters". Much of Waterloo Region's distinctive character is associated with its various cultural heritage elements: the Grand River, which has been nationally recognized as a Canadian Heritage River for its outstanding natural, cultural and recreational values; the diverse range of cities, towns, villages, and hamlets; and the gently rolling countryside. Ensuring liveability in Waterloo Region means planning to retain and/or create the types

of distinct local communities that will provide people with choices about where they live, work and play.

Chapter 3 3.F Access to Locally Grown and Other Healthy Food

The regional food system consists of the chain of activities related to the production, processing, distribution, consumption and eventual disposal of food. A strong and diverse regional food system provides many benefits to the community. It facilitates peoples' access to locally grown and other healthy foods, which contributes to healthier eating choices and the achievement of broader public health objectives. It also encourages a range of food destinations within easy walking distance of where people live and work. Such a system helps shorten the distance that food travels and that people travel to buy food, thereby reducing the demand on transportation infrastructure and the growth in vehicle emissions. As well, a strong regional food system supports local farmers and contributes to the vitality and economic strength of rural communities and Waterloo Region as a whole. For these reasons, this Plan seeks to strengthen and diversify the regional food system.

3.F.1 The Region will support the development of a strong regional food system through the policies in this Plan that:

- (a) establish a Countryside Line to protect the countryside for long-term agricultural use;
- (b) permit a full range of agricultural uses, farm-related uses and secondary uses to support the economic viability of local farms;
- (c) provide for a mix of land uses, including food destinations, within close proximity of each other to facilitate residents' access to locally grown and other healthy food products; and
- (d) provide a range of human services including affordable housing, subsidized daycare, employment and income supports that seek to ensure all residents have adequate incomes to be able to afford to buy locally grown and other healthy food products.

3.F.2 Area Municipalities will establish policies in their official plans to permit temporary farmers' markets, wherever appropriate, in existing and newly planned neighbourhoods, particularly in areas where access to locally grown food and other healthy food products may currently be limited.

3.F.3 Area Municipalities will establish policies in their official plans that encourage community gardens and rooftop gardens.

3.F.4 The Region will support community gardens, wherever feasible, by granting access to Regional lands, and by providing rain barrels, composting bins, compost, wood mulch or other forms of in-kind support.

3.F.5 The Region will collaborate with stakeholders to continue to implement initiatives supporting the development of a strong regional food system.

3.F.6 The Region supports food system planning as a means of improving the regional food system.

Appendix B:

Excerpt from the City of Vancouver's Animal Control By-Law (2011)

7.16 Keeping of hens

A person who keeps one or more hens must:

- (a) provide each hen with at least 0.37 m² of coop floor area, and at least 0.92 m² of roofed outdoor enclosure;
- (b) provide and maintain a floor of any combination of vegetated or bare earth in each outdoor enclosure;
- (c) provide and maintain, in each coop, at least one perch, for each hen, that is at least 15 cm long, and one nest box;
- (d) keep each hen in the enclosed area at all times;
- (e) provide each hen with food, water, shelter, light, ventilation, veterinary care, and opportunities for essential behaviours such as scratching, dust-bathing, and roosting, all sufficient to maintain the hen in good health;
- (f) maintain each hen enclosure in good repair and sanitary condition, and free from vermin and obnoxious smells and substances;
- (g) construct and maintain each hen enclosure to prevent any rodent from harbouring underneath or within it or within its walls, and to prevent entrance by any other animal;
- (h) keep a food container and water container in each coop;
- (i) keep each coop locked from sunset to sunrise;
- (j) remove leftover feed, trash, and manure in a timely manner;
- (k) store manure within a fully enclosed structure, and store no more than three cubic feet of manure at a time;
- (l) remove all other manure not used for composting or fertilizing;
- (m) follow biosecurity procedures recommended by the Canadian Food Inspection Agency;
- (n) keep hens for personal use only, and not sell eggs, manure, meat, or other products derived from hens;
- (o) not slaughter, or attempt to euthanize, a hen on the property;
- (p) not dispose of a hen except by delivering it to the Poundkeeper, or to a farm, abattoir, veterinarian, mobile slaughter unit, or other facility that has the ability to dispose of hens lawfully; or
- (q) not keep a hen in a cage.

Appendix C:

The City of Vancouver's backyard hen registration form ("Backyard hen registry", 2011)

Backyard Hens **Backyard Hen Registration Form**

* Hen Owner	<input type="text"/>	<input type="text"/>
	First Name	Last Name
* Address	<input type="text"/>	<input type="text"/>
	Street No	Street Name
	<input type="text"/>	
	Unit	
* City	<input type="text" value="Vancouver"/>	
Postal Code	<input type="text"/>	
* Phone Number(s) Please enter at least one	<input type="text"/>	<input type="text"/>
	Home	Cell
	<input type="text"/>	<input type="text"/>
	Work	<input type="text"/>
Email	<input type="text"/>	
Comment	<input type="text"/>	
	<input type="checkbox"/> I confirm that I reside on the above property.	
	<input type="checkbox"/> I confirm that I have read and understand the information regarding Backyard Hen Registry.	
	<input type="button" value="Submit"/>	<input type="button" value="Reset"/>

Note: Fields marked with * are required information. Fields marked with ! are not valid.

Appendix D:

List and description of interview participants

E.D., November 11, 2011	E.D. is a planning lawyer in the Region of Waterloo
A.C., November 25, 2011	A.C. is a urban hen-keeper within the City of Guelph. He and his household are involved in a number of 'alternative' living ventures, which include raising hens for eggs and then meat at end-of-life, as well as vegetable gardening.
J.N., November 25, 2011	J.N. was an illegal urban hen-keeper in central Hamilton. He and his family began raising chickens for eggs and meat, and rabbits for meat. The project began as an effort to teach his children about animals and where food comes from. Unfortunately (or fortunately) the chickens and rabbits became a part of the family, and the coop was not very suitable for hot summers, so the family gave the chickens away to friends on a farm and have kept the rabbits as pets.
K.S., November 22, 2011	K.S. is a semi-legal* urban beekeeper in central Hamilton. She, her family, and some neighbours began the beekeeping activities – they wanted to participate in urban farming, but weren't allowed chickens or goats, so they decided on bees. *They are registered with the province, but don't necessarily have a property large enough to keep bees under the Bees Act (1990).
K.C., November 26, 2011	K.C. and his son have 10 hives in 3 locations out in the country in the Region of Waterloo. K.C. has been keeping bees for 20 years and has mentored 9 novice beekeepers.
K.D., October 25, 2011	K.D. is an established organic market gardener farming in the Ottawa Valley. Living in a rural location, she faced no legal issues in recently adding dairy goats to her operation and has been excited for many years to be able to provide fresh dairy to her personal and wider farm family. She is a firm believer in raw milk and also participates in a wide range of alternative food ventures – from raising heritage meat birds to involvement with provincial-wide food co-ops.

Appendix E:
Research questions

1. Do you keep chickens, goats and/or bees for eggs, milk and/or honey within an urban environment?
2. Why did you get started in urban livestock rearing? Will you continue? Expand?
3. What was the process involved in successfully running an urban livestock farm?
 - a. Capital investment? Permits?
 - b. Was it difficult to get started?
4. What kind of opposition, if any, did you experience when beginning your urban livestock rearing?
 - a. What kinds of support?
 - b. What experiences have you had with neighbours and the community at large?
5. Do you see urban livestock rearing as feasible for the average person?
 - a. That is, what type of time commitment and resources are required?
 - b. What advice would you give to someone considering keeping urban livestock?