Citizen's Environmental Committee Special project:

honey bee populations in the city of Arlington

Introduction

Formation of the Committee

The Citizens Environmental Committee (CEC) was created as a standing committee of the City of Arlington on January 10, 2006, through Council adoption of Ordinance 06-8. The original ordinance established a nine-member Committee; this was subsequently amended on February 14, 2006, to provide for one additional member to be appointed by the Mayor.

Committee Membership (as of August 6, 2019)

The current membership of the Committee is as follows:

Julie Hunt, Chair – appointed by Mayor Williams
Linda Dean – appointed by Council Member Capehart
Shirley Patterson – appointed by Council Member Wolff
Wayne S. Halliburton, Appointed by Council Member Moise
Idalina Brasil Yaokum – Appointed by Council Member Sutton
Ranjana Bhandari – Appointed by Council Member Piel
Reginal Lewis – Appointed by Council Member Shepard
William J. Gase – Appointed by Council Member Farrar-Myers
Dixie L. Brothers – Appointed by Council Member Odom-Wesley
Robert E. Price – Appointed by Mayor Williams

Members whose terms expired during the project but contributed to the activities of this group are:

Phillip Kabakoff – appointed by Mayor Jeff Williams
Anna Pettit – appointed by Council Member Lana Wolff
Cynthia Rowe – appointed by Council Member Charlie Parker
Don Trammell – appointed by Mayor Jeff Williams
Beverly Crawford – appointed by Mayor Jeff Williams
Edwin Dean – appointed by Council Member Robert Shepard
Norma Flores Chuks – appointed by Council Member Michael Glaspie
Tellamecus Forsythe – appointed by Council Member Victoria Farrar-Myers
Michael Schneider – appointed by Council Member Robert Rivera
Darrel Smith Jr. – appointed by Council Member Charlie Parker

Committee Charge

The City Council's charge to the Citizens Environmental Committee is as follows:

> The Citizens Environmental Committee (CEC) is charged with evaluating and recommending to the Arlington City Council initiatives and strategies for improving the quality of the natural environment in Arlington. These initiatives and strategies will focus on the following areas: air quality, solid waste/recycling, water quality, handling and disposal of household hazardous materials, clean-up events, restoration of natural habitat, "brownfields" information, and recommendations for developing and implementing "green building" standards that ensure energy-efficient and environmentally-conscious construction of City buildings to the extent attainable under budgetary constraints. The CEC acts at the discretion of City Council. City Council will assign a topic for CEC to research. If no assignment is made by Council, the CEC will select a single policy area on which to

focus, meet periodically (not less than four times per year) to gather information and formulate its recommendations, and submit those recommendations to the City Council.

Meeting Schedule

The Committee currently meets six times per fiscal year. The meeting schedule is the evening of the third Wednesday of the second month of each quarter in the Public Works & Transportation Conference Rooms 1 & 2 (subject to availability).

Activity: Research the impact of mosquito spraying on honey bee populations

Goal: provide recommendations to City Council on how to preserve pollutions and/or lessen the impacts from spraying (if any)

Presentation 1: Honey Bees – Richard Threlkeld, Master Beekeeper

The Committee began its work by receiving a presentation by Richard Threlkeld, Master Bee Keeper on the impacts of honey bee populations from mosquito spraying. Mr. Threlkeld is forty-year Arlington resident and Master Beekeeper – recognized by the Agriculture Extension Service as an expert beekeeper and also named Distinguished Beekeeper of the Year in 2015.

Presentation Overview – R. Threlkeld (ref: www.canr.msu.edu/nativeplants/pollination)

Bumble bee

Why are bees important?

It has often been said that bees are responsible for one out of every three bites of food we eat. Most crops grown for their fruits (including vegetables such as squash, cucumber, tomato and eggplant), nuts, seeds, fiber (such as cotton), and hay (alfalfa grown to feed livestock), require pollination by insects. Pollinating insects also play a critical role in maintaining natural plant communities and ensuring production of seeds in most flowering plants. Pollination is the transfer of pollen from the male parts of a flower to the female parts of a flower of the same species, which results in fertilization of plant ovaries and the production of seeds. The main insect pollinators, by far, are bees, and while European honey bees are the best known and widely managed pollinators, there are also hundreds of other species of bees, mostly solitary ground nesting species, that contribute some level of pollination services to crops and are very important in natural plant communities.

Honey bee

Why are bees good pollinators?

Bees make excellent pollinators because most of their life is spent collecting pollen, a source of protein that they feed to their developing offspring. When a bee lands on a flower, the hairs all over the bees' body attract pollen grains through electrostatic forces. Stiff hairs on their legs enable them to groom the pollen into specialized brushes or pockets on their legs or body, and then carry it back to their nest. Individual bees tend to focus on one kind of flower at a time, which means it is more likely that pollen from one flower will be transferred to another flower of the same species by a particular bee. Many plants require this kind of pollen distribution, known as cross-pollination, in order to produce viable seeds. The business of collecting pollen requires a lot of energy, and so many flowers attract and also reward bees with nectar, a mixture of water and sugars produced by plants.

Carpenter bee

Where and how do bees live?

Most bee species dig nests in soil, while others utilize plants, either by boring holes in pithy plant stems or wood, or by nesting in galleries made by wood-boring beetles in trees or other preexisting cavities. Bumble bees are known to nest in abandoned rodent burrows and feral honey bees are known to nest in tree hollows. Bees use a variety of materials to build their nests. Most bees line their nest cells with a waxy material they produce themselves, but others use pieces of leaves, small pebbles mixed with resin from tree sap, or mud to form the cells in which they lay their eggs.

Why do bees need flowers throughout the growing season?

Many bee species are solitary (each female produces offspring in her own nest) with only one generation of bees produced per year. However, other species nest communally (several females share a nest) or have elaborate social structures with division of labor within the colony (usually with a single queen and many workers). These kinds of bees produce multiple generations per year. This means that bees that produce multiple generations each year need food resources (pollen and nectar) across most of the growing season to produce strong colonies. Providing plants in a landscape with overlapping bloom periods will help these bees survive and prosper.

Sweat bee

Bees need our help!

Bee communities, both wild and managed, have been declining over the last half century as pesticide use in agricultural and urban areas increased. Changes in land use have resulted in a patchy distribution of food and nesting resources. Concerned bee researchers recently met to discuss the current pollinator status in North America and to publish a report about it. Since January (2007), there have been a number of reports in the media about the mysterious disappearance of large numbers of honey bees called colony collapse disorder. This has many growers concerned about how they will continue to be able to pollinate their crops. Now more than ever, it is critical to consider practices that will benefit pollinators by providing habitats free of pesticides, full of nectar and pollen resources, and with ample potential nesting resources.

Presentation 2: Mosquito Spraying – Jason Williams, Regional Director, Vector Disease Control International

The CEC's second presentation was given by Jason Williams, Regional Director for Vector Disease Control International, the City of Arlington's mosquito abatement contractor. Mr. Williams is a multi-degreed biologist with over 15 years experience. He has conducted field surveillance and monitored larval and adult mosquito population density, using expertise in the taxonomy, ecology, and regional arboviral vector competency of the Mid-Atlantic mosquito species; assessed habitat, including wetlands, for mosquito species compatibility; and has monitored arboviral (West Nile virus and Eastern Equine Encephalitis virus) activity within the adult mosquito population.

Presentation Overview – J. Williams

Before Mr. Williams presented information on vector control in the City, the CEC posed the following questions. Mr. Williams based his presentation on responding to each of these questions. A synopsis of his responses to each question is outlined below.

1. Why spray for mosquitos? An introduction to the problems of mosquitos and the need to spray.
2. How did your organization come to partner with the city for spraying?
3. In your experience, has spraying for mosquitos caused a significant impact to honey bee populations (in Arlington, specifically)?
4. How do you communicate with bee keepers about spraying?
5. What kinds of credentials and licensing are required to spray?
6. Does spraying for Zika impact bee populations more? Why?

1. Spraying for mosquitoes is based on whether or not mosquitoes are creating a nuisance, public health issue or both. For the City of Arlington, mosquitoes are more of a public health issue.

2. VCDI won the RFP contract with the City of Arlington in 2013 and has provided the City vector control assistance since that time.

3. Mosquito adulticide is unlikely to impact honey bee populations due to: (1) spraying begins at 9 pm; (2) droplet size; (3) ultra low volume; (4) no-spray list for added safety (for beekeepers that they know of). Spray also biodegrades and photodegrades.

4. Communication is mission and contract dependent. However usually 48 hours prior notice is given before spraying. Also, the Community Development and Planning Department notify via static signs, social media, and the news.

5. Pesticide and vector control licenses are obtained from the Texas Department of Agriculture.

6. Zika spraying can impact bee populations depending on the type of application used. Aerial applications are more impactful given large coverage areas, but backpack/handheld localized spraying and targeted spraying (via ground truck) are less likely to impact populations.

Mr. Williams provided final comments regarding mosquito adulticide and larvicide approaches to control. He noted that Larval mosquito control forms the backbone of most Integrated Mosquito Management (IMM) programs throughout the country and for a good reason. There is no single more effective method of preventing the emergence of adult mosquitoes than a comprehensive approach in which larval habitats such as ponds, marshes, swamps, fields, ditches, etc., are regularly inspected and when necessary treated with a larvicide. The use of a larvicide designed primarily to impact mosquito larvae thereby reduces the risks to non-target organisms. Depending on the size and layout of the larval area larvicide applications can take place on land or in the air. Successful implantation demonstrably reduces though not totally eliminates the number of adult mosquitoes in a given control area, minimizing the need for more intensive and to some controversial adult control actions. However, adult mosquito control is by far the most well-known form of mosquito reduction and paradoxically for that reason also the most misunderstood. The fact remains that adult

mosquito control is a key component to Integrated Mosquito Management and often the only viable control option available. Even the most thorough larviciding efforts will not eliminate all mosquitoes. Adult mosquitoes do not respect boundaries, and when the threat of mosquito-borne diseases exists, such as West Nile virus and Zika, there is a need for a robust approach to protecting public health warranting adult control measures.

Committee Discussion

The CEC's considered the following main concerns and opinions of the presenters and deliberated on five (5) specific questions.

Bees (Beekeeper concerns)	Mosquitoes (Vector Control Opinions)
• No Beekeeper networks specific to Arlington.	• Arlington sprays mainly from West Nile Virus. There is no spraying in Arlington without a positive case of West Nile virus. The idea is to not create a resistance in mosquitoes.
• City is to notify state inspector of mosquito spraying and the inspector would notify the beekeepers. This doesn't happen.	• Spraying is for Public Health reasons; not nuisance reasons. Spraying only occurs in Arlington if there is a positive test for West Nile because they don't want to create a resistance in mosquitoes.
• Code compliance complaints from neighbors; how to reduce these?	• Opinion of contractor that mosquito spraying is unlikely to impact honey bee populations due to: (1) spraying begins at 9 pm; (2) droplet size; (3) ultra low volume; (4) no-spray list for added safety (for beekeepers that they know of). Spray also biodegrades and photodegrades.
• Urban beekeeping education (City/beekeepers partnership). Perhaps with the libraries.	• Environmental Health uses news, social media, and static sign notifications and provides notice 48 hours prior to spraying is to begin.
• City might develop with standards for urban beekeeping	
• Possibility of Hives on City property	
• Involvement from restaurants and hotels on keeping bees on property	
• Locations for City monitored hives? Tierra Verde?	
• Texas Beekeepers Associations wants to hold a conference in Arlington (classroom/auditorium type space).	
• Steps to make Arlington a Bee Friendly City.	

Questions for Deliberation

Based on the information received from both speakers, do you believe there is an impact from mosquito spraying on honey bees? If yes, does Arlington need to address this issue and how does Arlington do so? If no, is an urban beekeeping program beneficial to the City?
Should Arlington become a bee friendly City? Why? And what benefit does it provide?
What would an urban beekeeping program look like? Think about all aspects of urban beekeeping? Education, location of hives, training for interested parties (staff/volunteers).
Is a beekeeping ordinance necessary? Why?
Are ordinance changes necessary regarding spraying? Why?

Recommendations of the Committee

Based on the presentations from Mr. Threlkeld and Mr. Williams, the committee determined that the vector control program in place in Arlington does not have an impact on current honey bee populations. However, in their research, the committee recognized the importance and benefit of honey bees and has determined the need for some additional educational and protective efforts made by the City. The committee has made the following recommendations regarding honey bee populations in Arlington:

Recommendation 1: The committee strongly supports education and outreach that focuses on educating the public on the benefit and importance of honey bees. As such, the committee recommends that the City of Arlington City Council create and promote an education and awareness campaign (to include social media) on the importance and benefit of honey bees in the City. *(Supports Council Priorities: Support Quality Education and Champion Great Neighborhoods)*

Recommendation 2: The committee strongly supports the opportunity for beekeepers to be notified of mosquito spraying activities. As such, the committee recommends that the City of Arlington City Council should direct City staff to create a way for beekeepers to self-register for notification of mosquito spraying via an online application and similarly receive notifications via email or text message. *(Supports Council Priority: Put Technology to Work)*

Recommendation 3: The committee strongly supports an education and outreach effort through educational signage located in pollinator habitats in and around Arlington. Through such efforts, residents and visitors may find pertinent information about bees and would be able to educate themselves about Arlington's honeybee populations and the benefits and importance of bees in general. *(Supports Council Priorities: Support Quality Education and Champion Great Neighborhoods)*

Recommendation 4: The committee strongly supports the opportunity for Arlington residents (of all ages) who are interested to participate in urban beekeeping. As such, the committee recommends that the City of Arlington City Council should direct City staff to develop an urban beekeeping education program either collaboratively with the Texas Beekeepers Association or

other like entity or solely as provided by the City of Arlington. *(Supports Council Priority: Support Quality Education and Champion Great Neighborhoods)*

Recommendation 5: The committee strongly supports the opportunity to create pollinator habitats to promote beneficial bee habitats. As such, the committee recommends that the City of Arlington City Council should direct city staff to create and/or enhance undisturbed pollinator areas or create pollinator friendly park or demonstration spaces to decrease the threat to honeybee populations. *(Supports Council Priority: Support Quality Education and Champion Great Neighborhoods)*

Recommendation 6: The committee strongly supports the concept of Bee City USA, a national program that endorses creating sustainable habitats for pollinators. As such, the committee recommends that the City of Arlington endorse the Bee City USA commitments and become a bee friendly city. *(Supports Council Priority: Champion Great Neighborhoods)*

Recommendation 7: The committee strongly supports buy-in of the bee city concept which includes formal adoption of policies via city ordinance. As such, the committee recommends that the City Council formulate language for inclusion in current city ordinance or a new city ordinance that expressly promotes sustainable habitats for pollinators and other bee friendly policies.

Recommendation 8: The committee strongly supports opportunities for young women and girls to see positive environmental images. As such, the committee recommends a collaborative effort with the Texas Beekeepers Association to bring the Texas Honeybee Queen/Princess to Arlington to speak on and promote sustainable habitats for pollinators and the benefits of honeybees to the environment. *(Supports Council Priority: Support Quality Education)*

The committee has voted unanimously to approve these recommendations and submit to council for final discussion and promulgation.

Summary and Conclusion

Opportunities exist in several areas for the City to promote, expand, and support honey bee protection and education efforts. Perhaps the biggest challenge will be changing underlying attitudes about honey bees, which can only be achieved through substantial increases in preservation and conservation-themed education at all levels. Changing attitudes and perceptions about these beneficial pollinators is critical as the City continues to support environmental habitat restoration, creation, beautification, and preservation efforts. Without significant changes in attitudes toward honey bees, the loss of this important pollinator group increases beyond the City's ability to safeguard them. Bee communities, both wild and managed, have been declining over the last half century as pesticide use in agricultural and urban areas increased. Promoting behavioral changes through education allows citizens to learn about and consider practices that will benefit pollinators by providing habitats free of pesticides, full of nectar and pollen resources, and ample potential nesting resources.

Respectfully submitted,
The Citizens Environmental Committee