THE IMPORTANCE OF LOCAL NATURAL HABITAT TO URBAN AGRICULTURE

John G. Zahina-Ramos
Doctoral Candidate
Department of Geosciences, Florida Atlantic University
Urban food production can play a significant role in sustainability

- Food is one of the largest imports into cities
- Contributes to resource conservation
- Linked to economically, environmentally and socially sustainable communities
- Other impacts extend to areas of nutrition, health, entrepreneurship and social equity
Urban agriculture can contribute significantly to urban sustainability
- Growing in popularity and practice
- Can be efficient and productive

Urban agriculture must be sited on existing urban greenspace
- Private greenspace is the largest land cover type in most cities
- Greatest potential production area in cities
Many agricultural crops depend on insects and other organisms for health and reproduction
- Crop pest predators
- Pollination for fruit and seed production
- Urban agriculture is no less dependent on these organisms

In most cities, there exists relatively little natural or managed habitats

Urban agriculture has a vested interest in the extent and quality of local natural habitat
- Haven for beneficial organisms or pest predators
Study area of interest (AOI)
- 196 single-family homes
  - Quarter acre lots
- One church
- Five commercial lots
- Covers 32.6 hectares (80.57 acres)
- Subtropical climate with two seasons
One backyard in the AOI was the site of a fruit and vegetable production study

- Two years 2010-2012
- Food growing area of approximately 130 square meters (1400 square feet)
- More than 5 fruit, 50 vegetable and 12 herb types

Variety and quantity of each type recorded

How much of AOI resident’s food needs can be met?
## Urban Agriculture Case Study

<table>
<thead>
<tr>
<th>Potential Available Area in Production</th>
<th>Potential Production Metric Ton (Ton)</th>
<th>Fresh Fruit &amp; Vegetable Food Demand Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>12.6 (13.8)</td>
<td>14%</td>
</tr>
<tr>
<td>50%</td>
<td>25.1 (27.7)</td>
<td>31%</td>
</tr>
<tr>
<td>75%</td>
<td>37.7 (41.5)</td>
<td>47%</td>
</tr>
<tr>
<td>100%</td>
<td>50.3 (55.4)</td>
<td>63%</td>
</tr>
<tr>
<td>100% + Church</td>
<td>59.5 (65.6)</td>
<td>76%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Refugia Area</th>
<th>0.2 hectare (0.5 acre)</th>
</tr>
</thead>
</table>

The potential production metrics for different levels of available area in production are given above, along with the corresponding percentage of fresh fruit and vegetable food demand met.
AOI Crop Pollinators

- Bumblebees (14/1)
- Butterflies (1/0)
- Carpenter bees (1/0)
- Honey bees (22/13)
- Leafcutter bees (1/0)
- Solitary bees (15/13)
- Squash bees (3/0)
- Stingless bees (5/0)
- Fig wasps (1*/0)
- Wasps (1/0)
- Hover flies (1/1)
- Flies (5/4)
- Nutilulid beetle (1*/0)
- Sphinx moths (1/0)
- Moths (1/0)
- Thrips (1/0)

Number of food plant types: (food / reproduction)  * indicates exclusivity
Pest Predators

- Resident birds
- Migratory birds
- Ladybugs
- Praying mantis
- Soldier beetle
- Predatory wasps
- Parasitic wasps
- Green lacewing
- Mealybug destroyer
- Minute pirate bug
- Big eyed-bug
- Assassin bug
- Damsel bug
- Syrphid fly
- Tachinid fly
Urban Agriculture and Natural Habitat

- A successful urban agriculture relies on a healthy and local community of beneficial organisms
  - Habitat appropriate to organisms
  - Permanent

- Urban agriculture must use environmentally-friendly practices to support beneficial organisms
  - Low or safe pesticide use
  - Food gardens viewed as a habitat extension
Urban agriculture and urban natural habitat can enhance, rather than compete, with each other

- Urban agriculture can be sited on existing managed land cover (e.g., turf, barren land)
- Food growing gardens can be used by wildlife, offers some ecological function
- Season nature of agriculture requires a haven for beneficial organisms during fallow periods
Agriculture is usually viewed as a rural and not an urban issue.

Natural areas in urban settings viewed as:
- Buffers
- Recreation area
- Wildlife habitat
- Natural feature reserve

The role of natural habitat in urban food production needs more consideration because of the relative scarcity of natural habitat in cities.
In Conclusion

- As the practice of urban agriculture expands, the need for healthy and functional local natural areas have added importance.
- Contributes to urban sustainability in an indirect and unexpected way.
- The role of and need for local natural areas is typically overlooked in urban agricultural planning.
Questions?

- Contact me at:
  - jzahina@fau.edu

- Follow my research at:
  - www.justonebackyard.com