



# **Urban Food Forests in Detroit: An Exploration into the Benefits of Edible Landscapes and Perennial Fruit Access in Urban Centers**

**Stathis Pauls**

**Detroit Partnership for Food, Learning, and Innovation**

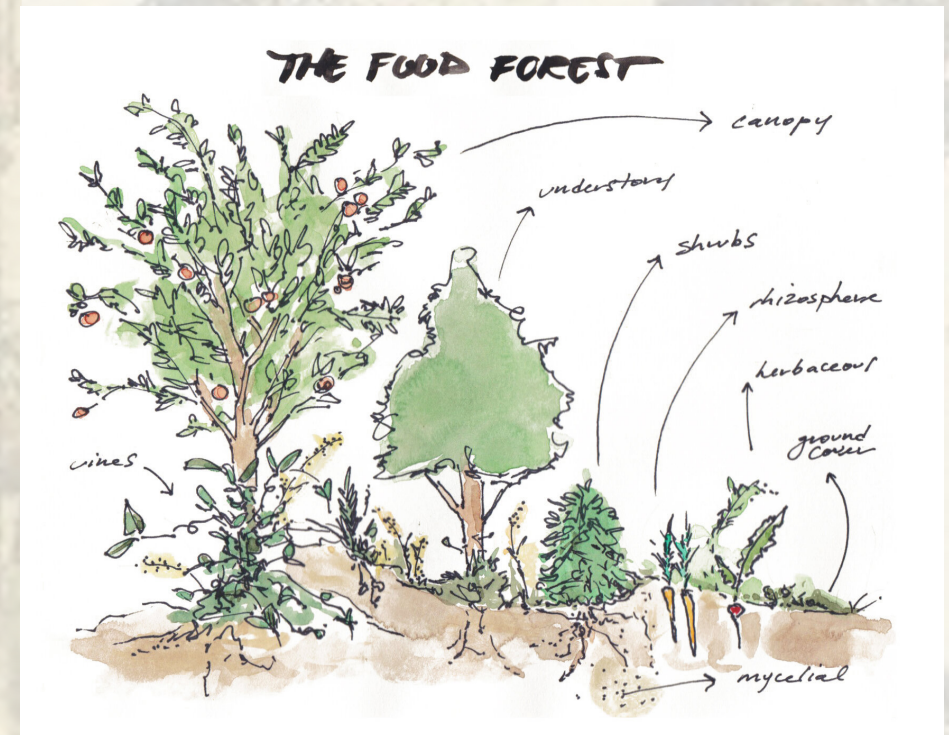
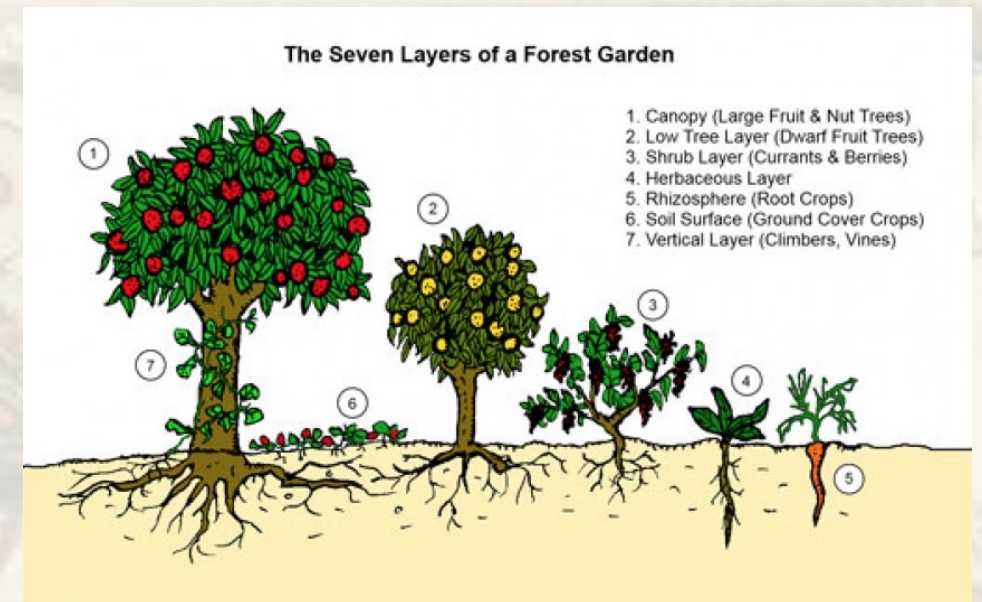
**MICHIGAN STATE**  
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**Extension**



# What is a Food Forest?

- Edible forest gardening - most crops come from perennial woody plants
- Edible forests are more resilient to climate change, sequester carbon in soil, capture stormwater and reduce flooding, and when plants reach maturity, the yields are abundant, nutrient dense sources of protein, carbohydrates, and healthy fats
- Large woody plants that create shade reduce the impact of “urban island heat affect”, which contributes to health issues in urban communities





# Food Forest Benefits

Forests and tree food production systems



Natural forests  
(wild/ managed)



Agroforestry



Orchards, plantations



Urban Forests

Contributions to food systems

Diet diversity  
Employment & Income  
Market & product diversity

## Security & Nutrition

Sustainable sourcing Improved land use  
Erosion control Nutrient cycling

## Biodiversity Conservation

Genetic repositories Climate mitigation  
Traditional and Local Knowledge

## Cultural identities

Connection to nature

## Governance

Public health

- Address issues of sustainability, climate change, and reducing the environmental impact of the industrialized food system by localizing production
- Naturally filter out air pollution, act as carbon sinks, are critical storm water management tools, and stabilize and improve soil health
- Adding food sources and additional species to the biodiversity of cities



# Food Forest Benefits

## Pairing nuts and dried fruit for cardiometabolic health

[Arianna Carughi](#),<sup>1</sup> [Mary Jo Feeney](#),<sup>2</sup> [Penny Kris-Etherton](#),<sup>3</sup> [Victor Fulgoni, III](#),<sup>4</sup> [Cyril W. C. Kendall](#),<sup>5</sup> [Mònica Bulló](#),<sup>6</sup> and [Densie Webb](#)<sup>7</sup>

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### Abstract

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Certain dietary patterns, in which fruits and nuts are featured prominently, reduce risk of diabetes and cardiovascular disease. However, estimated fruit consumption historically in the U.S. has been lower than recommendations. Dried fruit intake is even lower with only about 6.9 % of the adult population reporting any consumption. The 2015 Dietary Guidelines Advisory Committee identified a gap between recommended fruit and vegetable intakes and the amount the population consumes. Even fewer Americans consume tree nuts, which are a nutrient-dense food, rich in bioactive compounds and healthy fatty acids. Consumption of fruits and nuts has been associated with reduced risk of cardiometabolic disease. An estimated 5.5 to 8.4 % of U.S. adults consume tree nuts and/or tree nut butter. This review examines the potential of pairing nuts and dried fruit to reduce cardiometabolic risk factors and focuses on emerging data on raisins and pistachios as representative of each food category. Evidence suggests that increasing consumption of both could help improve Americans' nutritional status and reduce the risk of chronic diseases.

## Food forests: Their services and sustainability

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### Abstract

Industrialized food systems use unsustainable practices leading to climate change, natural resource depletion, economic disparities across the value chain, and detrimental impacts on public health. In contrast, alternative food solutions such as food forests have the potential to provide healthy food, sufficient livelihoods, environmental services, and spaces for recreation, education, and community building. This study compiles evidence from more than 200 food forests worldwide, with

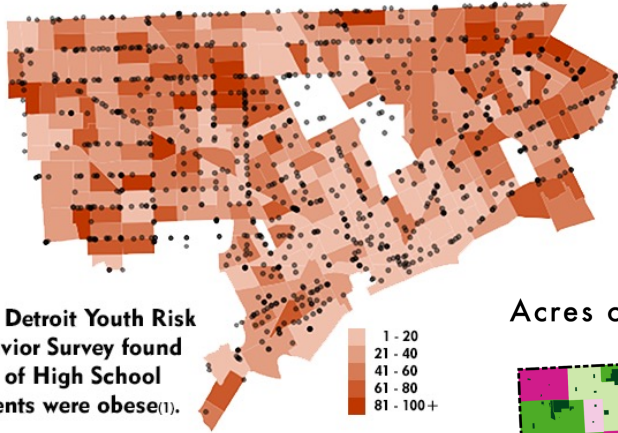
detailed insights on 14 exemplary food forests in Europe, North America, and South America, gained through site visits and interviews. We present and illustrate the main services that food forests provide and assess their sustainability. The findings indicate that the majority of food forests perform well on social-cultural and environmental criteria by building capacity, providing food, enhancing biodiversity, and regenerating soil, among others. However, for broader impact, food forests need to go beyond the provision of social-cultural and environmental services and enhance their economic viability. There is a need for specific trainings and other measures targeting this deficit. This study appraises the current state of food forests and provides an orientation for food entrepreneurs, public officials, and activists to better understand food forests' potential for advancing sustainable food systems.

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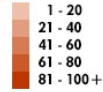
<sup>b</sup> Arnim Wiek, Professor, School of Sustainability, Arizona State University, Tempe, AZ USA; and Guest Professor, Centre for Global Sustainability and Cultural Transformation, Leuphana University Lüneburg, Lüneburg, Germany.



## Obesity Prevalence<sup>(2)</sup> and Corner Stores in Detroit

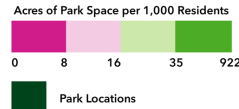
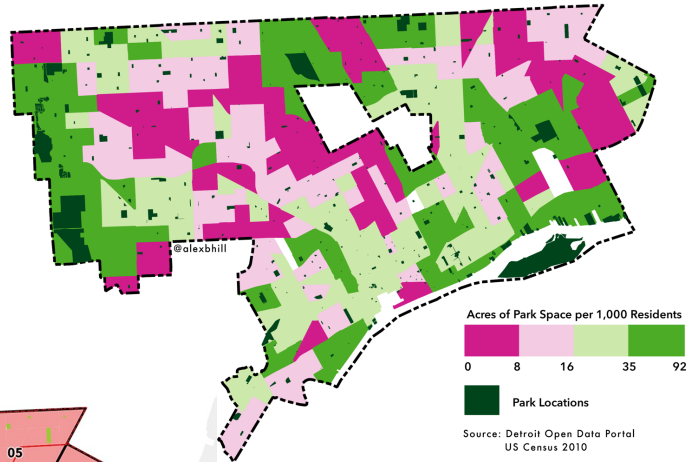


2011 Detroit Youth Risk Behavior Survey found 19% of High School students were obese<sup>(1)</sup>.



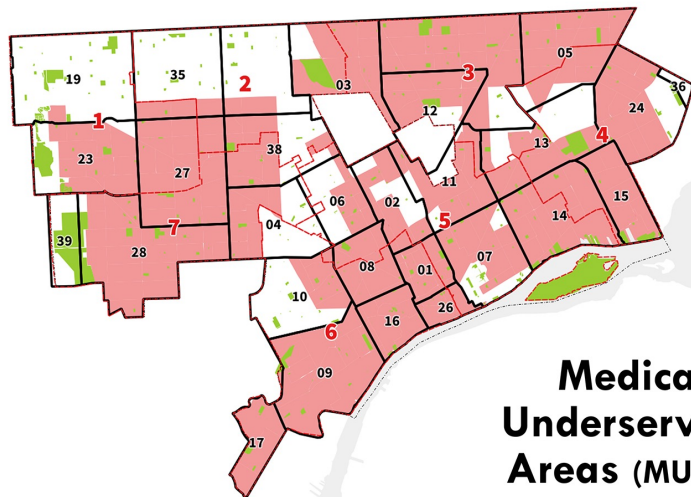
(1) The Obesity Epidemic and Detroit Students, 2011 Detroit Youth Risk Behavior Survey  
(2) Based on ACS 2011 public high school enrollment data, Census Bureau

## Acres of park space per 1,000 Residents



Source: Detroit Open Data Portal  
US Census 2010

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Medically Underserved Areas (MUAP)

## Built Environment

- Socioeconomic disparities lead to higher rates of food insecurity, heart disease and diabetes, and mental health ailments such as depression, anxiety, and mood disorders
- The state of the built environment in American cities is a major factor
- Green spaces, and by extension **food forests**, have been shown to address many if not all of these issues



## Urban Development and Environmental Degradation FREE

Wayne C. Zipperer, Robert Northrop, and Michael Andreu

Subject: Ecology, Sustainability and Solutions Online Publication Date: Aug 2020

DOI: 10.1093/acrefore/9780199389414.013.97

### Summary and Keywords

At the beginning of the 21st century more than 50% of the world's population lived in cities. By 2050, this percentage will exceed 60%, with the majority of growth occurring in Asia and Africa. As of 2020 there are 31 megacities, cities whose population exceeds 10 million, and 987 smaller cities whose populations are greater than 500 thousand but less than 5 million in the world. By 2030 there will be more than 41 megacities and 1290 smaller cities. However, not all cities are growing. In fact, shrinking cities, those whose populations are declining, occur throughout the world. Factors contributing to population decline include changes in the economy, low fertility rates, and catastrophic events. Population growth places extraordinary demand for natural resources and exceptional stress on natural systems. For example, over 13 million hectares of forest land are converted to agriculture, urban land use, and industrial forestry annually. This deforestation significantly affects both hydrologic systems and territorial habitats. Hydrologically, urbanization creates a condition called urban stream syndrome. The increase in storm runoff, caused by urbanization through the addition of impervious surfaces, alters stream flow, morphology, temperature, and water quantity and quality. In addition, leaky sewer lines and septic systems as well as the lack of sanitation systems contribute significant amounts of nutrients and organic contaminants such as pharmaceuticals, caffeine, and detergents. Ecologically, these stressors and contaminants significantly affect aquatic flora and fauna.



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### Urban Forestry & Urban Greening

journal homepage: [www.elsevier.com/locate/ufug](http://www.elsevier.com/locate/ufug)



## Declining urban and community tree cover in the United States

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#### ARTICLE INFO

##### Keywords:

Ecosystem services  
Forest monitoring  
Impervious surfaces  
Tree cover change  
Urban forests

#### ABSTRACT

Paired aerial photographs were interpreted to assess recent changes (c. 2009–2014) in tree, impervious and other cover types within urban/community and urban land in all 50 United States and the District of Columbia. National results indicate that tree cover in urban/community areas of the United States is on the decline at a rate of about 175,000 acres per year, which corresponds to approximately 36 million trees per year. Estimated loss of benefits from trees in urban areas is conservatively valued at \$96 million per year. Overall, for both urban and the broader urban/community areas, 23 states/districts had statistically significant declines in tree cover, 25 states had non-significant decreases or no change in tree cover, and three states showed a non-significant increase in tree cover. The most intensive change occurred within urban areas, with tree cover in these areas dropping one percent over the 5-year period, compared to a 0.7 percent drop in urban/community areas. States/districts with the greatest statistically significant annual decline in percent urban tree cover were: Oklahoma (−0.92%/yr), District of Columbia (−0.44%/yr), Rhode Island (−0.40%/yr), Oregon (−0.38%/yr) and Georgia (−0.37%/yr). Coinciding with the loss of tree cover was a gain in impervious cover, with impervious cover increasing 0.6 percent in urban/community areas and 1.0 percent in urban areas over the 5-year period. Such changes in cover types affect the benefits derived from urban forests and consequently the health and well-being of urban residents.









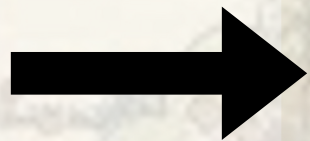




2020



2021







2022









# Naim & Stathis - DPFLI



- Edible Forest Implementation
- Pruning classes
- Food Preservation
- Tree cultivation and care
- Fruit Crop Care
- Urban Farm Support
- IG: [msu\\_detroit\\_ag](#)



# Perennial Edible Crop Diversity at DPFLI

- Alliums
- Almond
- Apples (5)
- Apricots (2)
- Arrowood Viburnum
- Asparagus (3)
- Bearberry
- Black Currant (2)
- Blackberries (4)
- Blue Honeysuckle
- Burkwood viburnum
- Butternut
- Cherries (5)
- Chestnut (3)
- Cornelian Cherry
- Elderberry
- Figs (3)
- Goji Berry
- Gooseberries (2)
- Grapes
- Hackberry
- Hardy Kiwi (3)
- Hazelnut (4)
- Hickory
- Highbush Cranberry
- Jujube
- Juneberry
- Korean Stone Pine
- Lavender (3)
- Meyer Lemon
- Nanking cherry
- Nectarines
- Numerous Herbs
- Oaks (3)
- Pawpaw (4)
- Peaches (3)
- Pear (2)
- Pecan
- Persimmon (3)
- Plums (4)
- Quince
- Raspberries (5)
- Red Currant
- Rosehips (2)
- Sand Cherry
- Sea Buckthorn
- Serviceberry
- Strawberries (4)
- Sugar Maple
- Wild Plum
- Wild Raisin



(x) # of cultivars



# Community Engagement





# Edible Landscape Workforce



- Integrate crop maintenance into education system
- Shift landscaping work to forest stewardship
- Community organizations
- Production, distribution, marketing, preparation...



# What were/are your experiences interacting with food on the landscape?





# Edible Communities





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