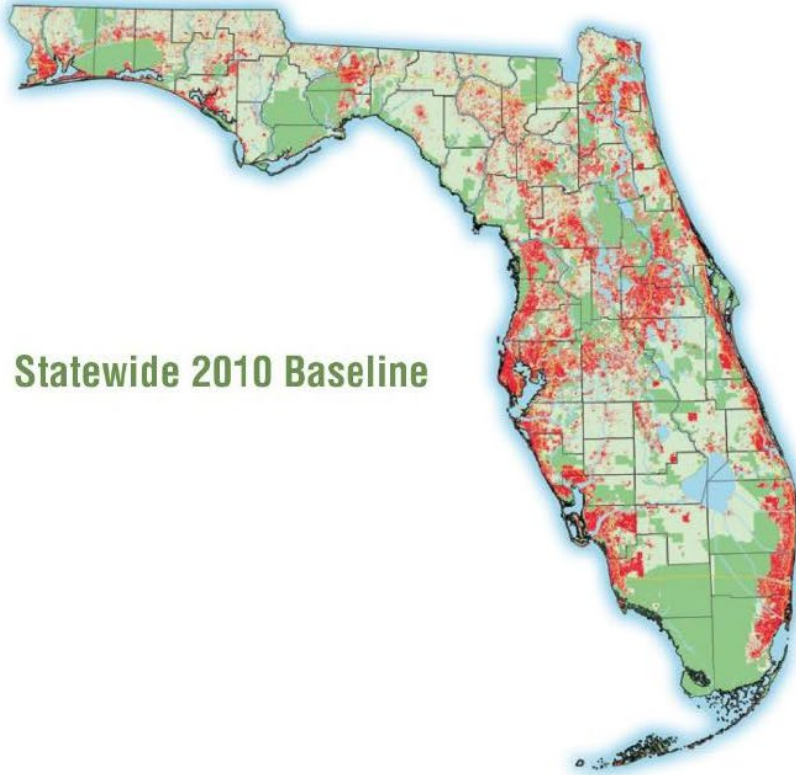


Alternative Landscaping as a Water Conservation Strategy in Expanding Residential Landscapes

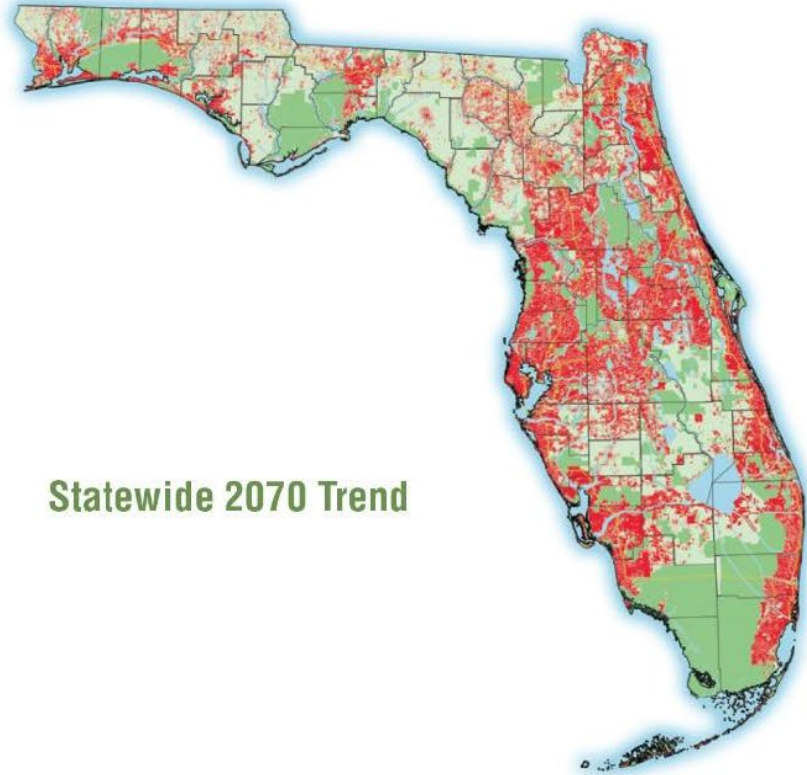
Basil Iannone, Patrick J. Bohlen, Brooke L. Moffis, Victoria Cope, Jennison Kipp, Nicholas Taylor, and Pierce Jones



Florida: Poster Child of Urbanization



Statewide 2010 Baseline



Statewide 2070 Trend

 Developed

 Protected

 Other

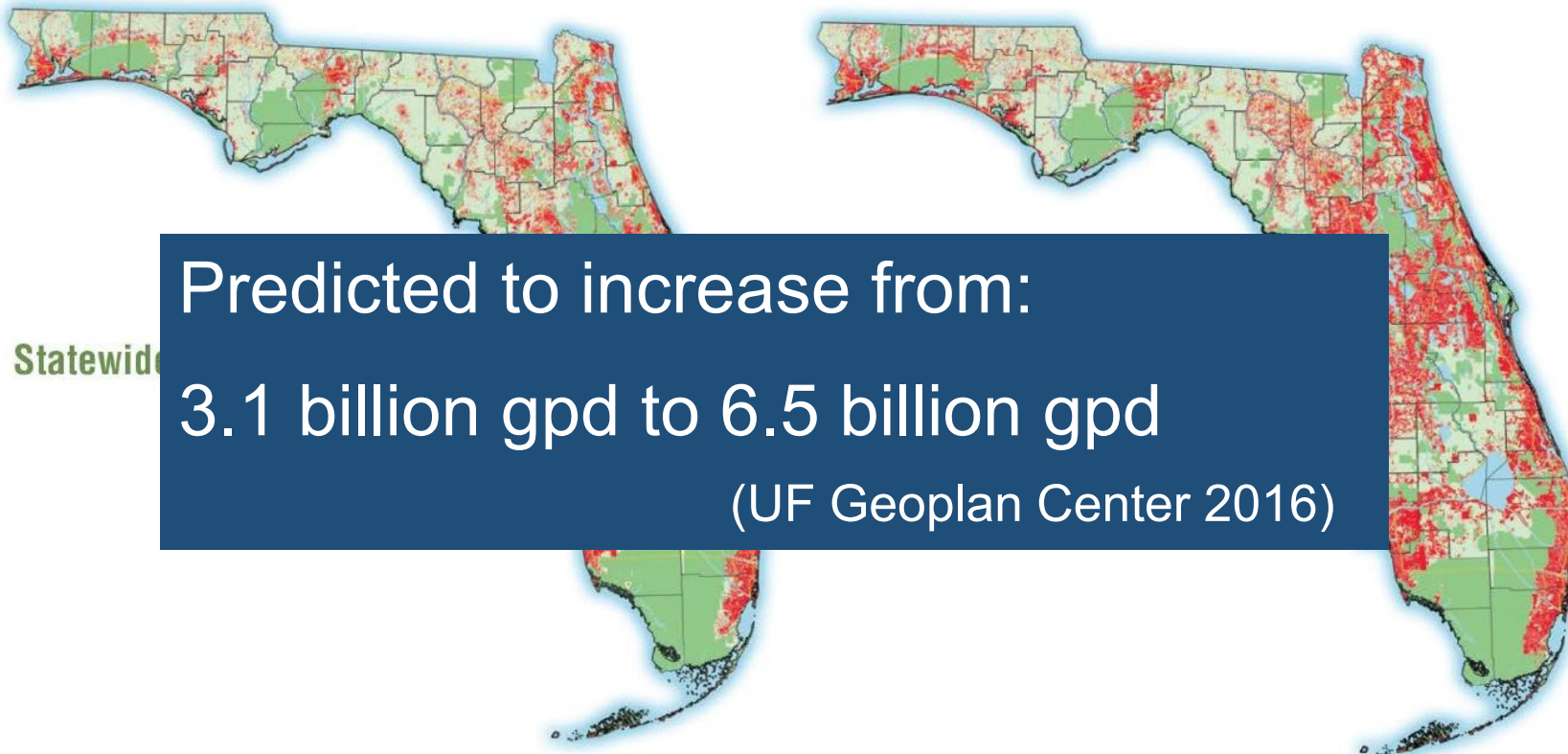
November 2016



A joint project of ...



Florida: Water Demand



Statewide

Predicted to increase from:
3.1 billion gpd to 6.5 billion gpd
(UF Geoplan Center 2016)

 Developed

 Protected

 Other


WATER
2070

A joint project of ...



November 2016

Conventional Development



Opportunity for Change



TAVISTOCK
DEVELOPMENT COMPANY



PREC
PROGRAM FOR RESOURCE
EFFICIENT COMMUNITIES

Google Earth

28°19'11.75" N 81°09'12.95" W elev 69 ft eye alt 32951 ft

A lot of Partners!



UF | IFAS Extension
UNIVERSITY of FLORIDA



PREC
PROGRAM FOR RESOURCE
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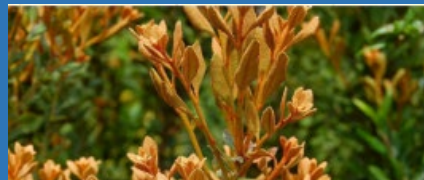
The Nature
Conservancy



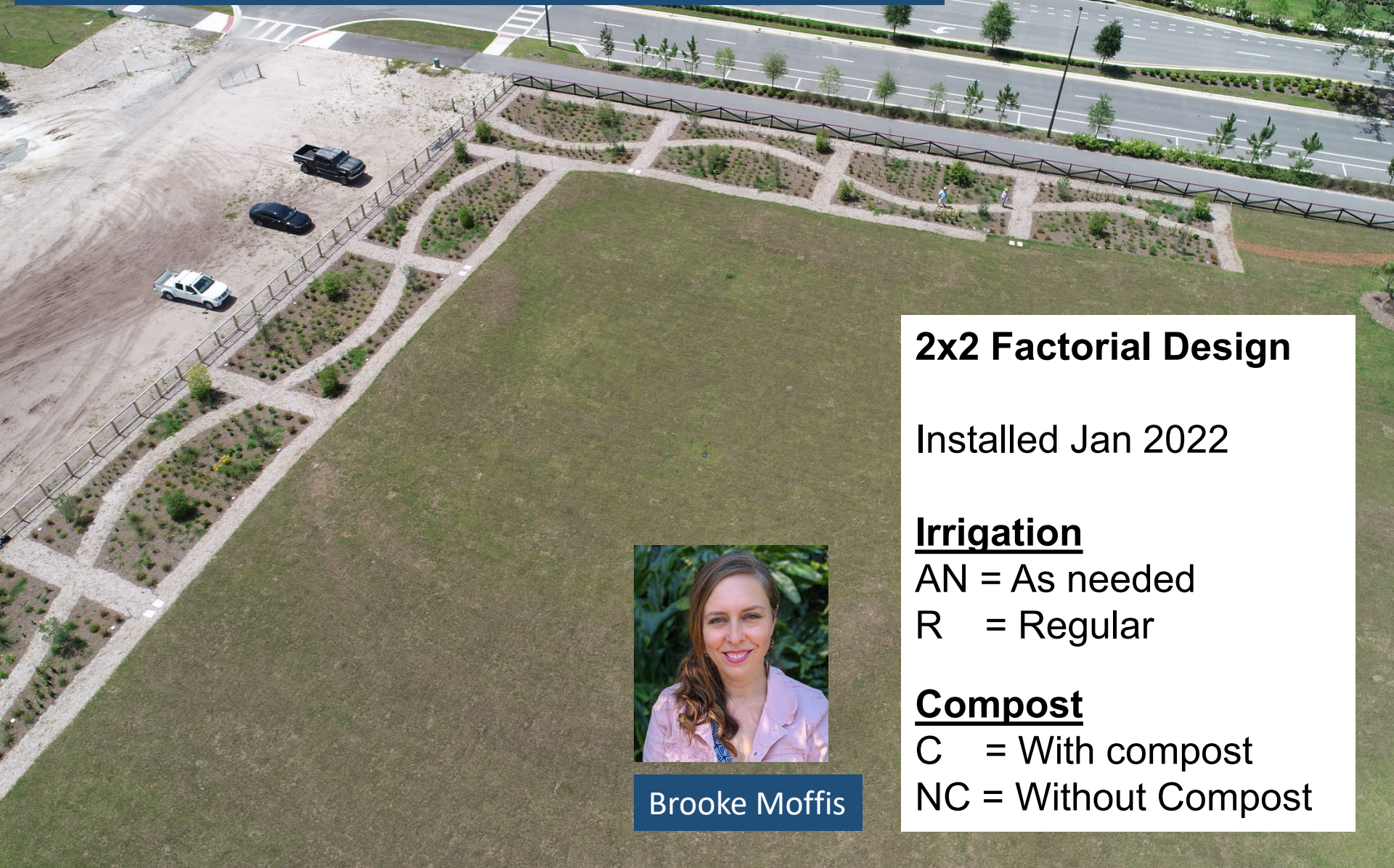
LIFE SOILS

Native Plants to Conserve Water

	Genus	Specific Epithet	Common Name
Trees	Ilex	vomitorea	Yaupon Holly
	Ilex	vomitorea 'Pendula'	Weeping Yaupon Holly
	Myrcianthes	fragrans	Simpson's Stopper - tree
Shrubs	Hamelia	patens 'Calusa'	Calusa Firebush
	Hypericum	reductum	St. Johnswort
	Ilex	glabra	Gallberry
	Lyonia	ferruginea	Rusty Lyonia
	Psychotria	nervosa	Wild Coffee
	Vaccinium	darrowii	Darrow's Blueberry
	Viburnum	obovatum "Mrs Sc Del"	Dwf Walter's Viburnum
Grasses	Andropogon	ternarius	Splitbeard Bluestem
	Andropogon	virginicus 'Glaucua'	Chalky Bluestem
	Muhlenbergia	capillaris	Muhly Grass
	Schizachyrium	scoparium	Little Bluestem
Wildflowers	Conoclinium	coelestinum	Mistflower
	Coreopsis	lanceolata	Lanceleaved Tickseed
	Dyschoriste	humistrata	Swamp Twinflower
	Eryngium	yuccifolium	Button Rattlesnake Master
	Eutrochium	purpurea	Joe Pye Weed
	Lobelia	cardinalis	Cardinalflower
	Mimosa	strigillosa	Sunshine Mimosa
	Mondarda	punctata	Spotted Bee Balm
	Phyla	nodiflora	Frogfruit
	Salvia	coccinea	Scarlet Sage
	Silphium	asteriscus	Starry Rosinweed
	Stachytarpheta	jamaicensis	Blue Porterweed
	Vernonia	gigantea	Giant Ironweed



Overcoming Poor Soil Conditions for Native Plant Establishment



2x2 Factorial Design

Installed Jan 2022

Irrigation

AN = As needed

R = Regular

Compost

C = With compost

NC = Without Compost



Brooke Moffis

Healthier Plants with Compost

No Compost

Compost

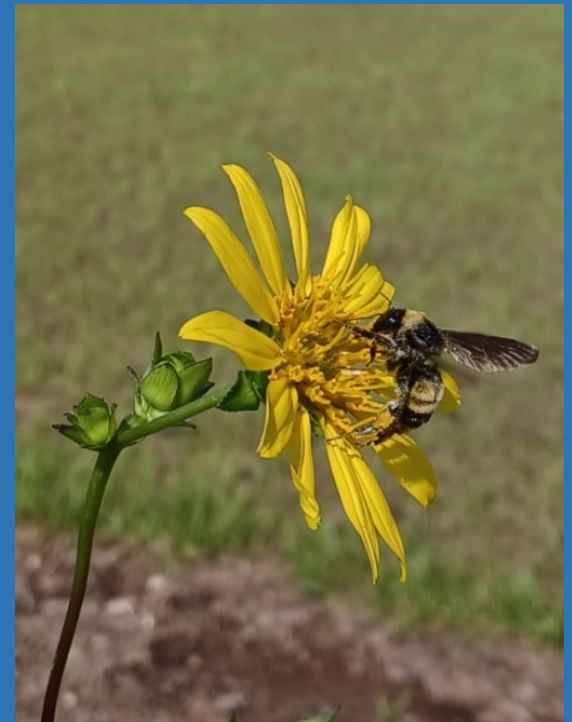
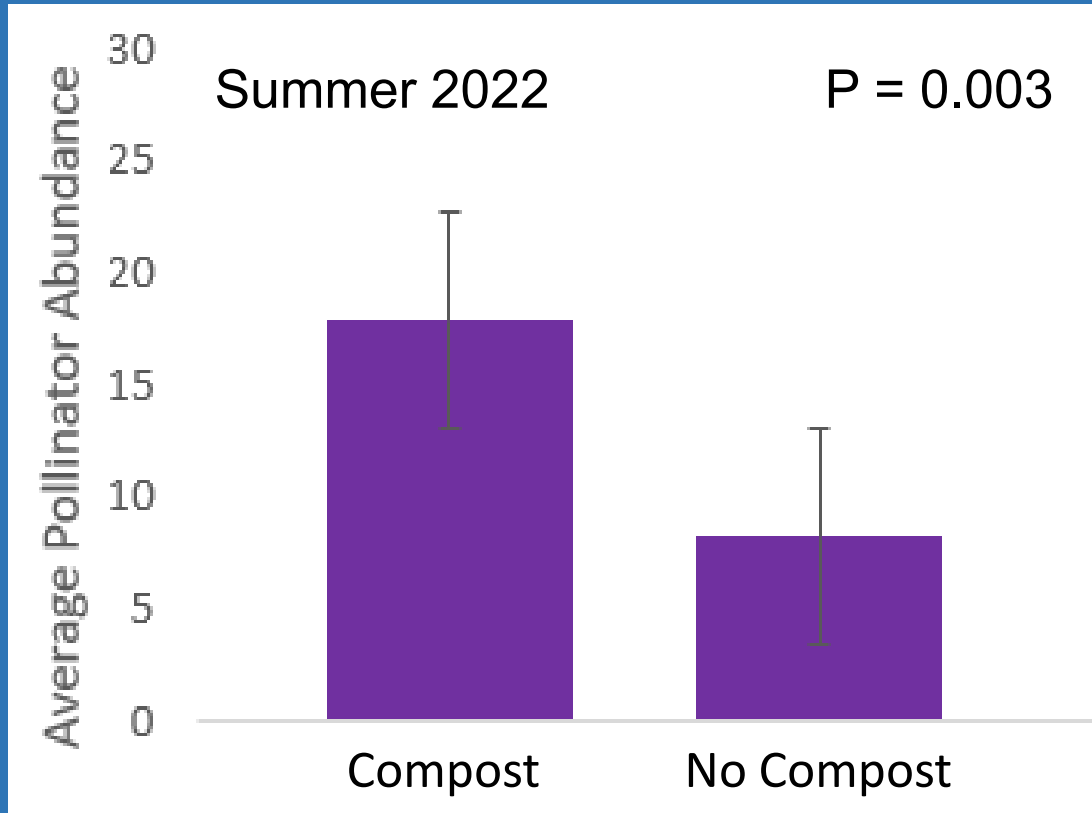
July 2022



March 2023



Trophic Effects of Compost



Mykayla Hagaman



Robin Pitilon

No Effects of Irrigation

**Same plant health & arthropod benefits with
78% less water!**

Adoption of Native-Dominated, Turf-Free Landscaping in Model Homes



Effects of Landscaping on Early Arthropod Foodwebs



Victoria
Cope



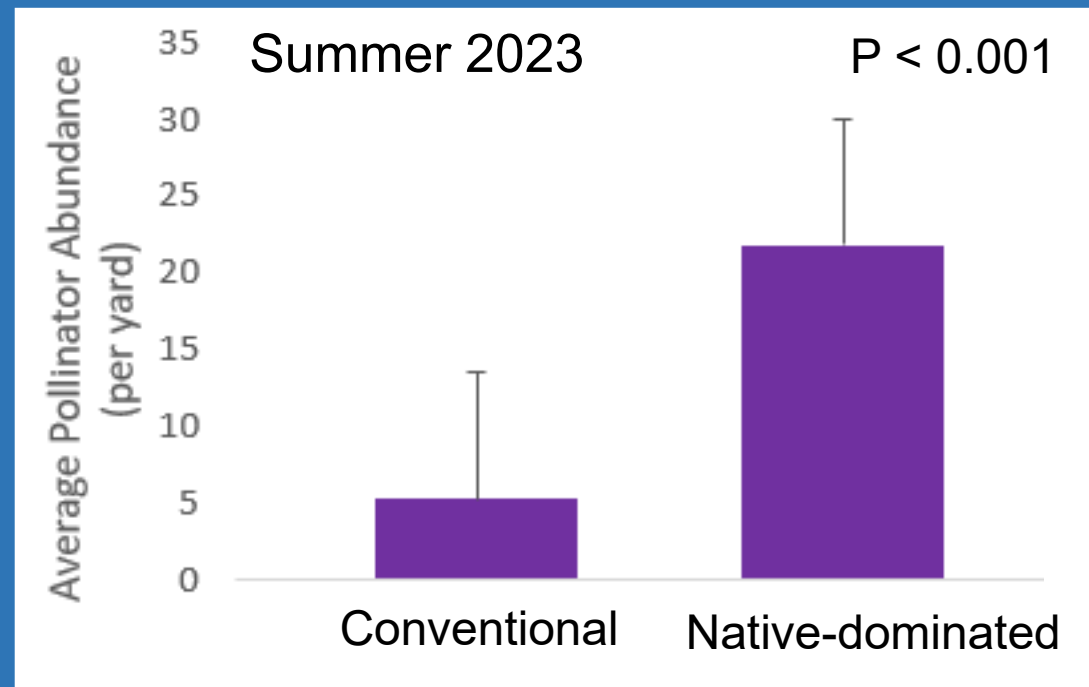
Mykayla
Hagaman



Pollinator Benefits

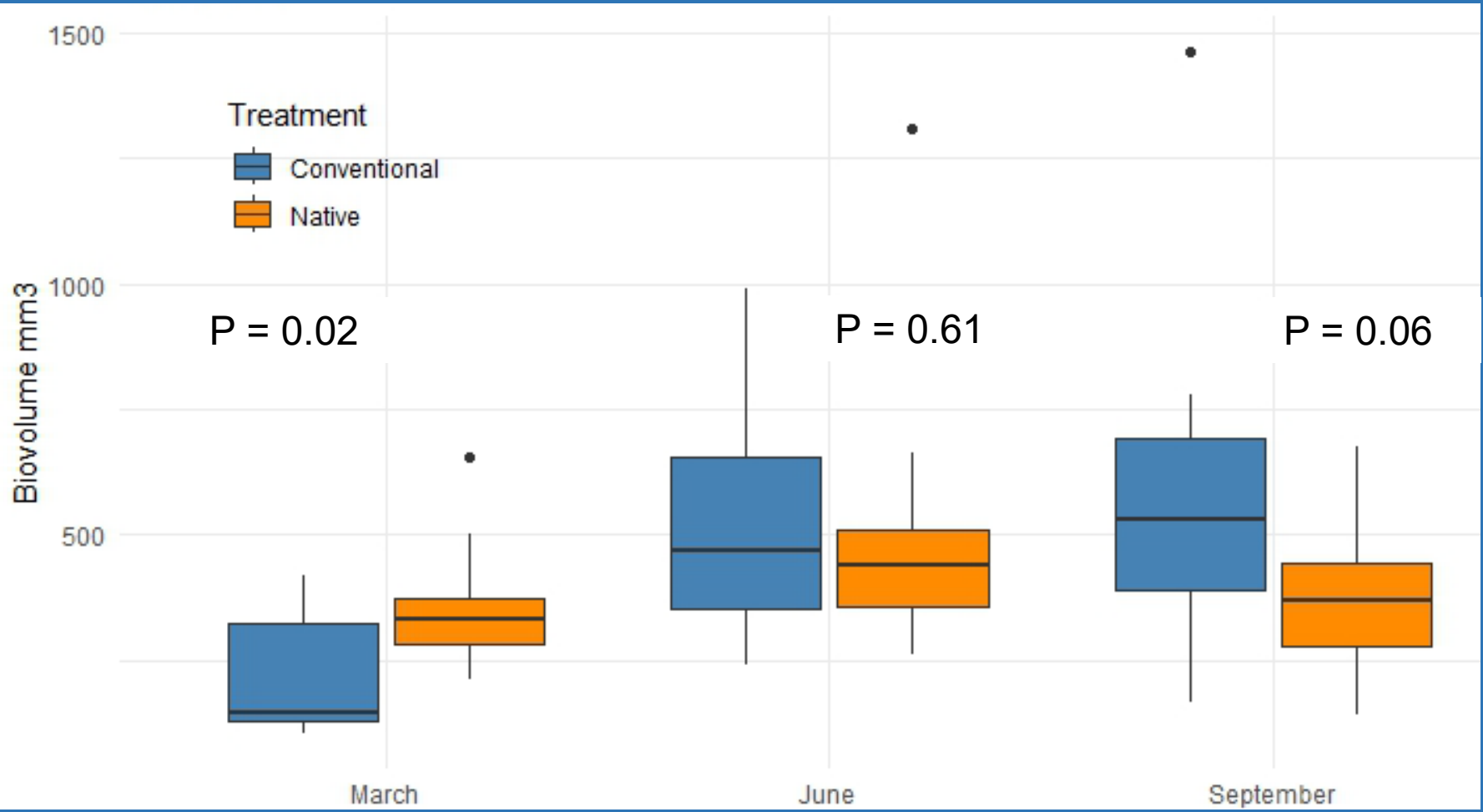


- No difference in floral resources ($p > 0.10$)



Seasonal Effects on Arthropod Biomass

(pitfall trap data)



Irrigation Usage

Toho Efficiency Program

- 28 inches / year = 62,836 gals / year
- ~ 3,600 ft² = 334 m²



Irrigation Usage

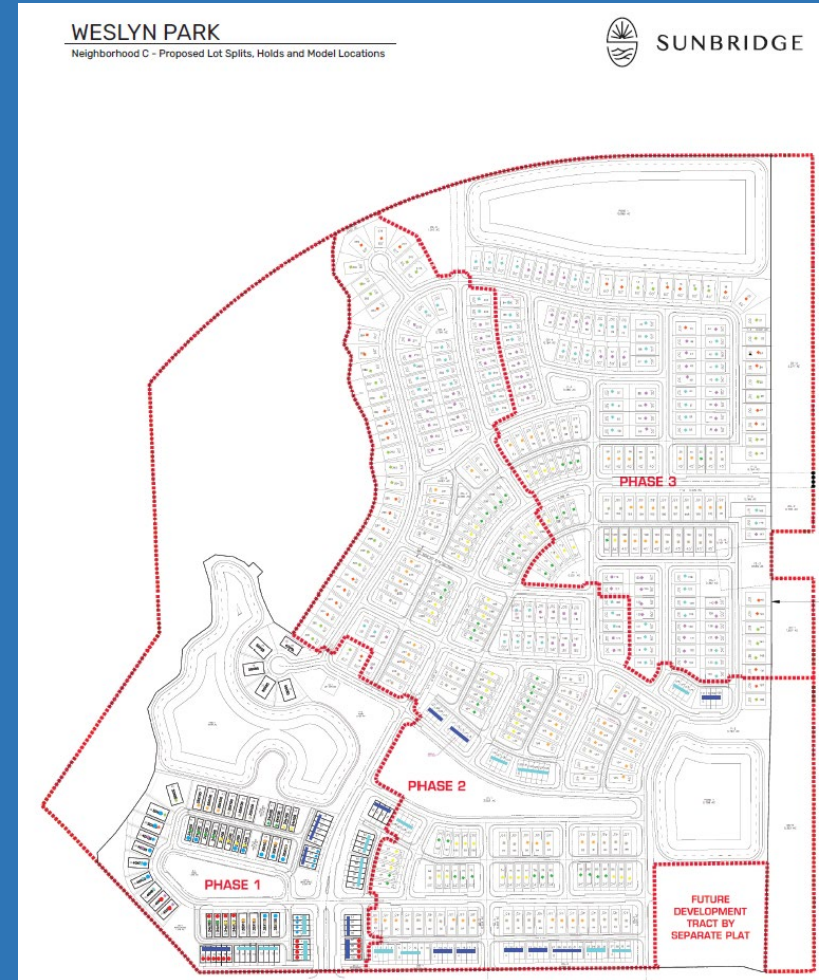
Community	Manager	Gal/year
Del Webb (Conventional)	Del Webb	123,427
Weslyn Park (Native dominated)	Cherrylake	34,784
Weslyn Park (Native dominated)	Other	151,927



New Policies for Next Development Phase (300 Homes)

Water Impacts:

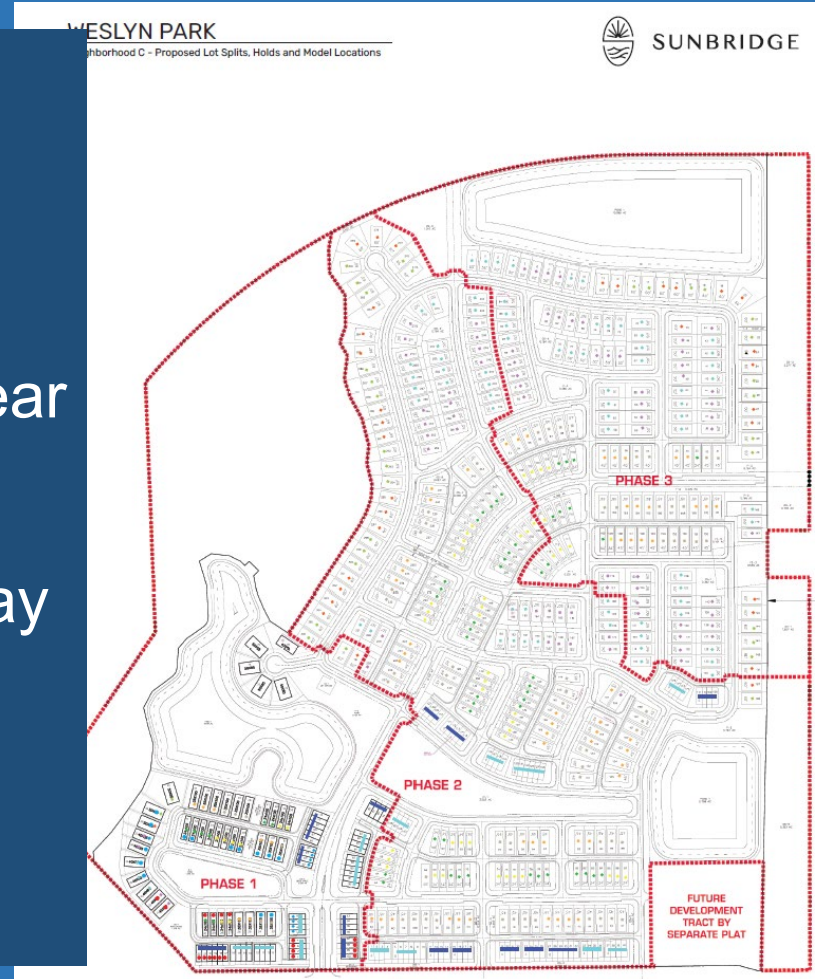
- Compost amendments
- Landscapes required to use 24" per year or less (Toho)
- Water will be master managed
- Landscape companies need to meet requirements to stay on *preferred list*
- Use native plants when available



New Policies for Next Development Phase (300 Homes)

Dream Projections:

- Landscaped area = 0.03 ha
 - UF/IFAS fertilizer & irrigation
- N = 3.2 – 8.3 thousand lbs./year
- P = 540 lbs./year
- H₂O = 36 – 133 thousand gal./day
- CO₂ = 85 thousand lbs./year



Conclusions

- *Conservation goals do not need to be mutually exclusive*
- Developments are opportunity for long-term research
- Water conservation offers economic opportunities
- Benefits of Private-Academic-NGO-Municipal partnerships



Conclusions

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Next Steps

- Long-term effects on *Ecology & Water usage?*
- Differences in arthropod community composition?
- Impacts to higher trophic levels?
- Resident perceptions