Session Summaries

EcoSummit
5-6 December 2023
Van Wezel Performing Arts Hall
Sarasota, Florida

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1 GROWTH & BALANCE

Over the past century, population growth and development patterns have increased pollution and decreased the environment's capacity to process it. In the face of continued rapid population growth, loss of environmental function and connectivity, and climate stressors, how can we grow the environment as we grow communities? Can we find balance through more sensitive land development practices that contain and minimize impacts?

1.1 VIEWPOINT: OUR STORY OF GROWTH & BALANCE

Sarasota native and three term Sarasota County Commissioner Jon Thaxton brings the last half-century of growth into focus with thoughts on our community-driven legacy of environmental stewardship and advocacy.

JON THAXTON, Vice-President of Community Investment, Gulf Coast Community Foundation

The speaker began the presentation with a historical overview of Sarasota County, highlighting significant changes in landscapes and ecosystems. The focus was on the impact of human development on natural habitats, water quality, and overall environmental preservation.

The family history of the speaker, dating back to the early 20th century, provided context for the transformation of Sarasota County from open grassy prairies and wetlands to the current urbanized landscape. Key ecosystems such as flatwoods, wetlands, tidal creeks, and estuaries played crucial roles in water quality, habitat preservation, and the overall balance of the environment.

The presentation delved into the development plans over the years, starting from the 1975 future land use plan map. The evolution of plans, including the controversial Sarasota 2050 plan, was discussed. The speaker expressed concerns about how these plans, intended to balance population growth with environmental preservation, have not lived up to their promises. Specific issues included the loss of habitat, destruction of wetlands, and compromised environmental protection standards.

The speaker illustrated the outcomes of these planning decisions through visual examples, showing the before-and-after effects on various landscapes. Examples included the conversion of scrub habitat, destruction of estuarine mangroves, and the impact on water quality leading to red tide outbreaks. The negative consequences extended to transportation planning, affordable housing, and the compromise of Sarasota's agricultural history.

Towards the end of the presentation, the speaker presented an alternative perspective for the future. A simplified graphic categorized existing developments, approved but not yet developed areas, and public lands in Sarasota County. Only about 34,000 acres or 10% of the total county area remains for which use has yet to be determined. The speaker emphasized the need for a balanced approach in decision-making for the remaining undeveloped lands in Sarasota County.

In conclusion, the speaker urged the audience to be optimistic about the future, highlighting Sarasota's history of successful environmental initiatives. The focus shifted to learning from past mistakes, improving existing infrastructure, and adopting sustainable lifestyles to address the challenges faced by

the region. The EcoSummit was mentioned as an opportunity to explore solutions for a more sustainable and environmentally friendly Sarasota County.

1.2 Growth & Balance Panel Discussion

There is a better way. Led by smart growth expert Paul Owens from 1000 Friends of Florida, expert panelists discuss strategies for sustainable land development practices that grow environmental infrastructure, resiliency, and quality of life.

PAUL OWENS President, 1000 Friends of Florida
VAN LINKOUS, PHD Associate Professor, University of South Florida
TIMOTHEE SALLIN, President, Cherry Lake Tree Farm
JULIETTE DESFEUX Sustainability Advisor, Spinnaker Group

In the opening lecture, Owens highlighted the importance of planning for the state's future and posed the question of what kind of future they wanted to plan for.

The speaker emphasized the rapid growth in Florida and discussed the challenges of accommodating this growth, including the loss of open land to development, which occurred at a rate of 8 acres per hour. The negative impacts of this sprawling development pattern included increased traffic congestion, the unsustainable tax burden of maintaining sprawling public infrastructure, environmental degradation, and development in high-risk flood areas.

The importance of conserving natural and agricultural land was underscored, with the speaker advocating for buying land outright or purchasing development rights. They highlighted the benefits of such conservation efforts, including aquifer recharge, flood mitigation, and support for wildlife habitats.

Climate change vulnerability was addressed, particularly regarding sea-level rise and the potential relocation of residents from coastal areas. The speaker presented scenarios for past development patterns, comparing business-as-usual sprawl to a more sustainable conservation scenario, supported by figures projecting land loss and relocation.

The speaker concluded with a positive note, emphasizing the power of past community planning in Florida. They cited the example of the City of Lake Wales, where proactive planning accommodated growth while preserving green spaces, promoting traditional neighborhoods, and prioritizing historic preservation. The speaker encouraged citizens to participate in public hearings, stay informed about development proposals, and promote better, more sustainable development practices. Overall, the message was optimistic, emphasizing the power of past planning to shape a better future for Florida.

DISCUSSION

The discussion kicked off with an audience question: what one word describes the most important consideration for the quality of life. The responses included sustainability, health, happiness, peace, and nature. Professor Linkus emphasized trends in how her students perceive living in Tampa, highlighting the growing importance of urbanism, community, and access to nature.

Timothee emphasized the need for balance and harmony in planning, integrating human and ecological elements for a prosperous human society and a healthy environment. Juliette emphasized the importance of community and sustainability in planning, mentioning the positive impact of long-term planning.

The discussion also touched upon changes in state planning laws in Florida since 2011. Van discussed the shift in power from the state to local governments, allowing more local control but also facing challenges of state preemption in decision-making.

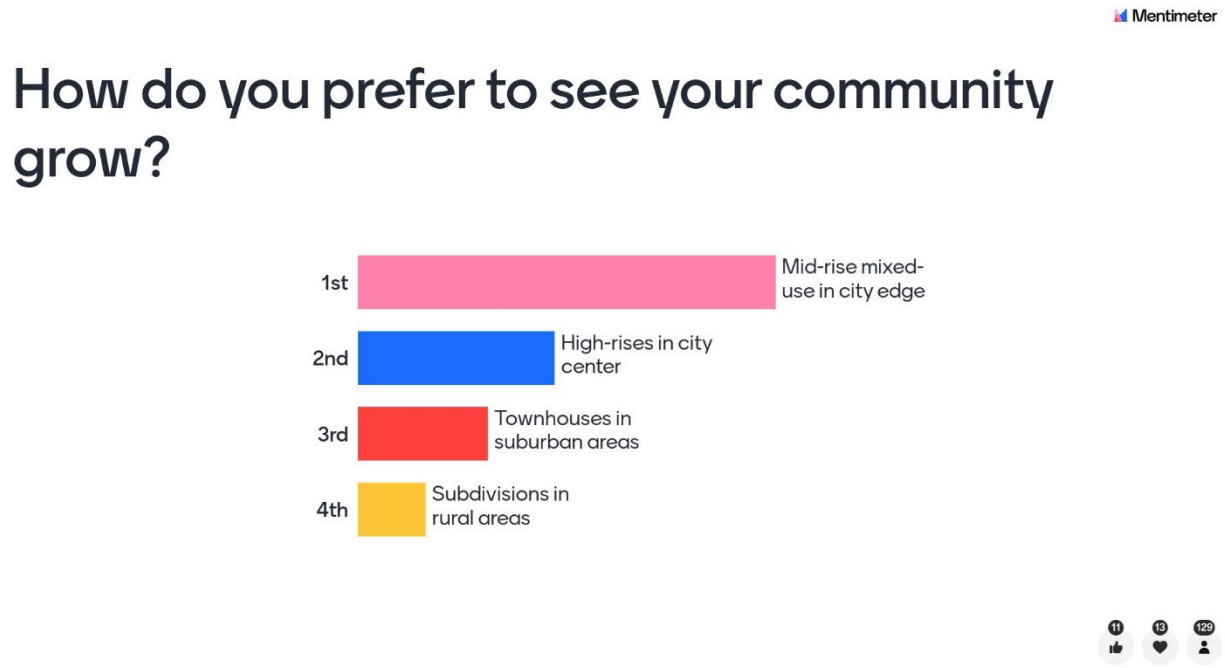
The planners also discussed successful examples of environmentally sustainable developments in Florida. Timothee mentioned Babcock Ranch and other projects focusing on larger master-planned communities with long-term visions. Juliette highlighted an urban redevelopment project in West Palm Beach, emphasizing sustainability, resilience, and a sense of community.

The conversation delved into the economic benefits of these projects, with Juliette mentioning over 2,000 job creations and increased tax income for the city from mixed-use developments. Van discussed the complexity of the relationship between planning and the economy in Florida.

The planners also discussed the growing appreciation of ecosystem services, emphasizing the economic value of natural lands in providing services like carbon sequestration, water recharge, and habitat support. Timothee highlighted the need to value and conserve natural lands for their economic benefits.

The discussion concluded with an audience question on community growth preferences, with the majority favoring midrise mixed-use on the city's edge over building new suburbs in rural areas. The panel expressed agreement with the survey results and emphasized the importance of communicating these views to local and state leaders for effective planning.

AUDIENCE POLLING



1.3 Case Studies in Green Development

Case studies in green development demonstrate that we can build back nature's ecosystem services into projects. Nature-based infrastructure becomes a critical "utility" that cleans water, protects against flooding, provides habitat, cools, and captures carbon.

1.3.1 JENNIFER ROMINIECKI CEO and President, Marie Selby Botanical Gardens

The speaker began by expressing excitement about presenting a green case study on Marie Selby Botanical Gardens. They emphasized the mission of the Gardens to connect people with air plants, native nature, and regional history. The presentation focused on the progress of the master plan for the downtown Sarasota campus, highlighting the importance of Selby Gardens' work in advancing plant research and conservation.

The master plan aimed to address key challenges, including housing scientifically documented collections of orchids and bromeliads, accommodating a growing number of visitors, preserving historical treasures, and ensuring long-term sustainability. The plan included the implementation of green innovations, such as solar panels, making Selby Gardens the first net positive energy Botanical Garden complex.

Sustainability elements involved seeking certification through the International Living Future Institute, with a focus on Petal certification. Stormwater management was a crucial aspect, utilizing a stormwater management vault, rain gardens, and recycled water for irrigation. Resilient architecture and biophilic design principles were incorporated, along with green financing through an ESG rating with a sustainability bond.

The speaker shared images and renderings of the future Selby Gardens, including the living energy access facility, plant research center, welcome center, glades garden, and garden to plate dining. The project was phased, with phase one opening on January 11, 2024, and over $57 million raised, primarily through private funding. In summary, the presentation showcased Selby Gardens' dedication to green innovation and sustainable practices in botanical garden design.

1.3.2 BILL WADDILL Planner, Kimley Horn (formerly COO, The Bay)

The presentation focused on water quality improvements at The Bay Park. The Bay Park project, covering approximately 53 acres, aimed to transform a largely impervious site into a green oasis. With a budget of about $200 million, the project was split equally between private funding and public funding. Notably, the project addressed a severe issue of stormwater runoff, with 300 million gallons of untreated polluted stormwater draining into the bay annually for decades.

Phase one of the project, covering 10 acres and costing around $30 million, showcased substantial improvements. Not only did it win awards for excellence, but it also incorporated various stormwater treatment tools, including denitrification trenches, baffle boxes, bioswales, and more. The goal was to treat about 75 million gallons of stormwater and set the stage for future phases.

The presentation emphasized the commitment to water quality improvements, with illustrations of treatment tools and their locations. Phase two, fully funded at $65 million, promised additional enhancements, such as pervious pavement in the cultural district and cleanup efforts in surrounding areas. The project underscored the intersection of environmental stewardship, public space development, and innovative stormwater management.

In summary, the presentation showcased Bay Park's transformative journey towards environmental conservation and improved water quality, symbolizing a commitment to creating a public park for all that not only educated and inspired but also contributed to the well-being of the planet.

1.3.3 TIMOTHEE SALLIN President, Cherry Lake Tree Farm

The speaker discussed the Outside Sustainable Landscape Collaborative, a collaborative nonprofit organization that focuses on increasing sustainable landscape practices in Florida. They highlighted the potential ecological impact of landscaping and the need to shift from conventional practices that degrade natural resources. The organization promotes diversity in native plants, soil health, and consideration of user needs while aimed for ecologically sustainable landscapes.

Model homes in the Sunbridge community showcased sustainable landscaping with zero turf, predominantly native plants, and specific functions like green stormwater management. The speaker acknowledged the challenges ingrained in regulatory frameworks and social norms but emphasized the desire for a shift in landscaping practices.

The Outside Collaborative's approach involved collaboration with stakeholders across the industry, holding themselves accountable through measurable goals such as reducing water, fertilizer, and pesticide usage while increasing ecosystem services. They adopted a systems approach, recognizing the complexity of landscapes and set forth 10 strategic goals to drive change.

The speaker introduced the concept of a neighborhood landscaping Pattern Book, emphasizing the importance of collaboration, accountability, and a systems approach to achieve a paradigm shift in landscaping. The organization's website, theoutsidecollab.com, provided further information.

2 LAND, LEGACY & SPECIAL PLACES

The fate of our last remaining natural lands will be decided in the next decade. What lands have we saved and what's left to protect? Saving land protects wild places for wildlife, waterways, and people. Managed conservation and agricultural lands support habitat connectivity, biodiversity, water flow, soil health, and local food systems. It's an insurance policy on our changing future.

2.1 SAVING OUR NATURAL AREAS AND WORKING LANDS

Locally and statewide, voters overwhelmingly support protection of our natural lands through acquisition of public lands and easements on private lands. Lead by Aliki Moncrief, panelists discuss how this may not be enough to protect the last remaining critical lands.

ALIKI MONCRIEF, JD Executive Director, Florida Conservation Voters
CHRISTINE JOHNSON President, Conservation Foundation of the Gulf Coast
CHARLIE HUNSICKER Director, Manatee County Natural Resources
JIM STRICKLAND Owner, Strickland Ranch

In the opening lecture, Moncrief started by outlining the key questions: why land protection was essential, how it was done in Florida, what areas were left to save, and who bore the responsibility for this conservation work. Moncrief listed the myriad benefits of protecting land, including preserving wildlife habitat, managing water resources, and combating climate change by sequestering carbon dioxide.

Moncrief also identified key threats to land, such as changes in land use, exploitation of natural resources, and pollution. The urgency of land conservation was underscored by alarming statistics – the United States loses 150 acres of natural lands every hour, equivalent to wiping out Everglades National Park annually. World Wildlife Fund's assessment indicated that since 1970, the U.S. has lost 69% of plant and animal populations.

Moncrief highlighted the work of The Florida Natural Areas Inventory, offering a detailed assessment of land protection achievements. Importantly, she corrected the common misconception that Florida had protected 30% of its land, clarifying that excluding wetlands, which have their own regulatory protections, the figure was around 13%.

The historical perspective came into play as Moncrief delved into Florida's history of land conservation. She highlighted the Water and Land Conservation Amendment of 2014, a significant conservation measure generating over $20 billion over 20 years for buying, restoring, and managing conservation lands. The audience was reminded of the consistent support from Floridians, dating back to 1963, evident in constitutional amendments emphasizing the state's commitment to conserve natural resources.

Moncrief discussed the uneven funding trajectory for land conservation, citing examples from the past, including Preservation 2000 and Florida's Water and Land Legacy Amendment. She noted recent increased funding for Florida Forever from the Florida legislature and the influx of federal funds. Local initiatives played a vital role, with communities passing numerous measures generating $1.6 billion for local land conservation since 2014.

In conclusion, Moncrief emphasized the collaborative efforts involving various stakeholders, including government entities, private landowners, and nonprofits. She set the stage for an exciting panel discussion, showcasing the diverse roles individuals and organizations played in Florida's ongoing land conservation efforts.

DISCUSSION

Christine from the Conservation Foundation of the Gulf Coast explained the role of land trusts in saving land. The primary tool in their toolbox is a conservation easement, where landowners give up development rights to protect natural resources. Jim, a landowner and rancher, highlighted the varied reasons why landowners may want to conserve their land, including a love for the land, family legacy, financial considerations, or a combination of these factors.

Charlie, with extensive experience in Manatee County land conservation, emphasized the significance of water protection as a driving force. He discussed the focus on protecting drinking water supplies and acquiring coastal lands. Notable successes included acquiring and restoring watershed lands and preserving coastline areas. The audience also shared that these restored lands are some of their favorite parks and preserves, including Duette Preserve, Emerson, and Robinson Preserve, demonstrating community engagement.

Challenges to land conservation were addressed, with Christine highlighting the constant need for advocacy and funding despite past efforts. The discussion touched on threats such as lack of funding, policies, and growth management leaders in public office. The audience identified the lack of growth management leaders as the most pressing issue.

Christine emphasized citizen engagement and urged the public to forward concerns to elected officials, stressing the importance of both expressing discontent and appreciation. Jim discussed the disconnect between the agricultural sector (2% of the population) and their way of life with the rest, calling for public support in raising awareness and funding. Charlie delved into the role of programs like Florida Communities Trust, supporting local governments in aligning with conservation goals.

They highlighted challenges faced by ranchers, emphasizing the critical need for funding in conservation programs such as Florida Forever and Rural Family Lands. The conversation shifted to the potential opportunities stemming from recent federal climate action legislation. Jim stressed the importance of using federal funding for research to quantify the value of well managed agricultural lands for the environment over the next 500 years. Those values need to be quantified and calibrated to present value and to be higher than development value for conservation to be a viable option for next generation landowners.

Looking ahead, the speakers expressed optimism about upcoming opportunities. Jim mentioned exciting initiatives, including a 4-million-acre reserve called Everglades to Gulf and collaborations with organizations like Audubon. He discussed advancements in technology, such as remote GPS herd management and the potential for artificial intelligence and facial recognition in managing wildlife and habitats.

In conclusion, the speakers urged the audience to get involved politically, stay informed, and contribute to the ongoing conversation on conservation. They stressed the need for public support in funding, research, and raising awareness to effectively preserve Florida's unique landscapes. The need for a collaborative effort involving biologists, ecologists, media, philanthropists, and the wider community was emphasized to make meaningful strides in land conservation and restoration.

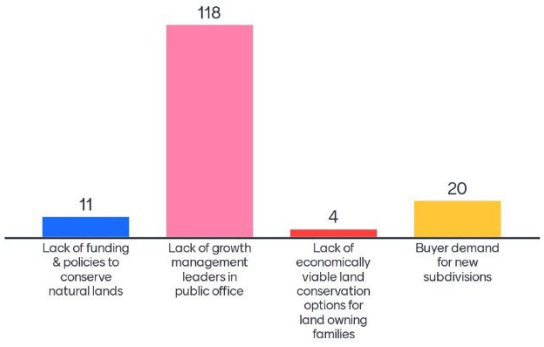
AUDIENCE POLLING

Mentimeter

What is your favorite park or preserve?
145 responses

Mentimeter

What do you believe is the biggest threat to saving Florida's open spaces?



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2.2 STORYTELLING: STORIES FROM THE FIELD

Storytellers reveal that perspective on nature is everything. Some see a threat, some see beauty. Through the lenses of time and culture, these storytellers will open your eyes to the magic and danger of Florida's wildlands and beasts.

2.2.1 SABRINA CUMMINGS, Youth Education Manager, Conservation Foundation of the Gulf Coast

Sabrina Cummings, the Youth Ed Manager for Conservation Foundation of the Gulf Coast, shares her personal story. She expresses her love for connecting children with nature and highlights a memorable incident where she educated a group of girls about the ecological sensitivity of beach dunes. Sabrina discusses her background as an archaeologist and the influence of her supportive mother on her career choices.

She emphasizes the importance of introducing youth to nature, citing the positive impact on their social, physical, and emotional development. Sabrina advocates for diversity in conservation, sharing her personal hero, Shelton Johnson, who works for the National Park Service. She stresses the need for representation and accessibility in outdoor spaces for people of all abilities.

Sabrina acknowledges her grandmother's experience with polio and discusses the importance of making green spaces accessible to everyone. She encourages advocacy for nature, emphasizing that everyone has a role to play in making conservation a diverse and inclusive movement.

2.2.2 UZI BARAM, PHD Director of Public Archaeology, Marie Selby Botanical Gardens

Dr. Uzi Baram's story about Florida's ancient past focuses on transcending time to understand the present and make informed choices for the future. He emphasizes the importance of archaeology in revealing the region's diverse history, using mammoths as a symbol of indigenous knowledge and environmental adaptation.

The story explores Florida's geological changes, highlighting the emergence of the land from underwater and the ancient landscapes populated by mammoths, giant sloths, and other creatures. Baram discusses the Paleo Indian period, where humans coexisted with mammoths and responded to sea lever rise and shifting coastlines, illustrating the dynamic relationship between people and the environment.

Monuments like the shell ring and traditions of ancient people serve as valuable lessons for the present, especially in the context of rising sea levels and intensified hurricanes. Baram draws parallels between the past and present, urging reflection on the choices we make for future landscapes. Ultimately, Baram prompts reflection on the kind of ancestors we want to be in shaping the landscapes for generations to come.

2.2.3 TONY CLEMENTS Division Manager, Sarasota County Natural Areas and Trails

In passionate spoken word, Tony Clements, a burn boss and steward of the flame for Sarasota County Parks, vividly describes the importance of prescribed fire in Florida. The narrative unfolds with vivid imagery of lightning strikes, thunder, and a stormfront igniting the landscape. The story emphasizes the ancient cycle of rebirth and renewal through fire, portraying it as a symphony orchestrated with a purpose.

Tony, as a burn boss, highlights the role of prescribed fire as a tool of stewardship, breathing life into landscapes and maintaining a rhythm over time. The story delves into the ecological significance, describing how prescribed fire clears away underbrush, allowing wildflowers to bloom and creating a vibrant tapestry of life. It emphasizes the positive impact on diverse species, including the Florida scrub jay and the gopher tortoise.

Beyond ecology, the narrative explores the cultural legacy of prescribed fire, acknowledging the wisdom of indigenous people who understood and embraced the dance with fire. The consequences of suppressing fire are also discussed, emphasizing the threat to ecosystems and wildlife.

The story concludes with a call to action, urging land managers, scientists, and guardians of the wild to responsibly use prescribed fire. It emphasizes the importance of wisdom and stewardship in ensuring a resilient and thriving Florida, with every prescribed fire being a promise for the future of the land and its inhabitants.

3 Making A Place For Nature

Where have all the birds gone? Has a generation lost touch with nature herself? Our urban and suburban environments are built for people not nature, but we can invite nature back. How could making space for nature in our urban and suburban places make us healthier and more resilient to heat and floods? We can safely regenerate and recharge natural systems right in our own backyards, neighborhood parks, and regional recreation areas to bring back water quality and wildlife.

3.1 Recharging Nature with Urban Restoration

Urban and suburban restoration matters at all scales from backyard to local golf course to regional park. Mark Hostetler, author of the how-to book *The Green Leap*, is joined by three experts with big successes to their credit.

MARK HOSTETLER, PHD Professor, University of Florida
JOHN KEIFER, PHD Principal Engineer, Black and Veach
JEANNE DUBI President, Sarasota Audubon Society
AEDAN STOCKDALE Education & Volunteer Div Manager, Manatee County Natural Resources

Hostetler, with over 30 years of experience in urban wildlife conservation, discussed lessons learned over the last 25 years working in Florida. The focus was on conserving biodiversity in urban areas, which constitute only 10% of land, but have far-reaching ecological impacts, as illustrated by light pollution visible in satellite images. The speaker touched upon decision-making at various levels, overcoming conventional inertia in biodiversity conservation, and the importance of addressing design, construction, and post-construction phases.

The speaker delved into decision-making levels – homeowners, developers, and policy makers. The policies set by the latter influence developers, whose decisions impact homeowners. The interconnectedness called for effective policies addressing and engaging all stakeholders at these levels. The speaker emphasized the significance of the design phase, where decisions about roads, vegetation,

and natural areas profoundly impacted biodiversity. Construction and post-construction phases were equally vital, addressing issues like maintenance of silt fences and managing human-wildlife conflicts, as illustrated by an intriguing story about alligators in a community pond.

Engaging policy makers required a focus on the three development phases, with an emphasis on design. Conservation biologists could play a crucial role in crafting policies. In dealing with developers, showcasing local examples of successful green developments could be impactful. The speaker highlighted the need for maverick developers who collaborate with environmental consulting firms to implement innovative solutions. The importance of education for homeowners was emphasized, with dynamic signs proving to be a more effective tool than brochures or websites. Incentives like tax breaks, conservation of tree canopies, and educational programs contributed to more informed and responsible citizens.

Summarizing, the speaker stressed the critical role of urban areas in conservation efforts and the need to address decision-making at all levels – homeowners, developers, and policymakers. Effective policies should encompass design, construction, and post-construction phases, engaging stakeholders and fostering a balance between ecological and economic considerations. Lastly, showcasing successful examples, incentivizing sustainable practices, and promoting education were essential for fostering a culture of responsible urban development. For more detailed guidelines and information, the Program for Resource Efficient Communities at the University of Florida and the speaker's book *The Green Leap: A Primer for Conserving Biodiversity in Subdivision Development* are valuable.

DISCUSSION

The panel discussion on urban ecology and restoration delved into the interconnectedness of natural and cultural resources within a community. The first speaker emphasized the importance of involving the community in habitat design, stating that community input is crucial from the base planning stage. They highlighted that the clients in conservation efforts are the community, wildlife, and plants, not the government or corporations.

The second speaker discussed Audubon's role as educators. They prioritize teaching members and visitors about the natural world, specifically birds, butterflies, insects, and native plants. The emphasis is on creating green spaces in individual backyards and patios to contribute to habitat conservation. The panelists further discussed the alarming decline in bird populations over the last 60 years, emphasizing the urgency of habitat restoration. They highlighted successful restoration projects and encouraged the use of citizen science tools, such as *iNaturalist*, to engage the public in observing and appreciating wildlife.

The third speaker, a design professional working on water management projects, stressed the significance of starting with the community when addressing environmental needs. They highlighted the importance of understanding the community's vision and needs, engaging interdisciplinary experts, and honoring the potential of the setting.

In response to a question about shifting residents' mindsets toward planting natives and adopting Florida-friendly landscaping, the speakers emphasized the role of education. They recommended resources such as native plant nurseries, extension offices, and nature centers. The discussion also

touched on the challenge of getting diverse communities to appreciate and conserve wild Florida. The panelists emphasized the need for exposure to native flora and fauna, promoting the natural beauty of the state, and educating on the benefits of nature-based solutions for flooding, pollution, or biodiversity loss. The example of challenging the cultural mystique of turf grass was cited as an example.

A speaker addressed the challenges of working with government agencies on projects with long time horizons. Patience and persistence are deemed essential when navigating bureaucratic processes and obtaining approvals for projects. The need for long-term vision, political momentum, and finding champions within government agencies is emphasized.

Transitioning to the topic of urban planning and resiliency, the speakers discuss the need for reserved space for nature and the challenge of achieving full natural resilience in developed areas especially in the face of sea-level rise. The discussion touches upon the importance of climate adaptive restoration plans, such as at Robinson Preserve, and community involvement in sustaining resilience at all scales: backyards to neighborhoods to regional parks.

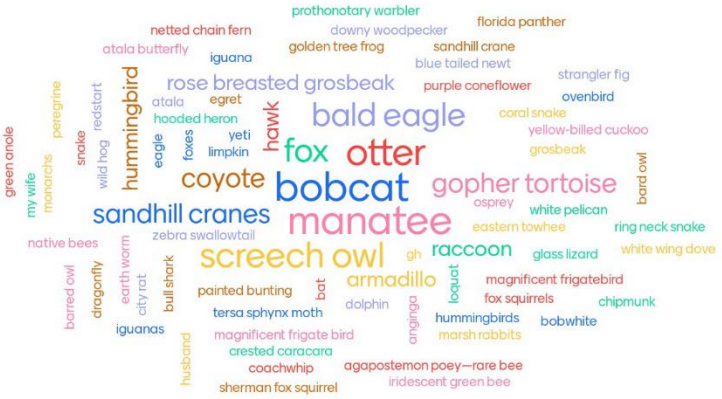
Concerns are raised about the adequacy of existing stormwater facilities, given climate change and increased development. The panel advocates for a layered approach to stormwater management, emphasizing distributed treatment in various locations rather than relying on singular, potentially risky solutions.

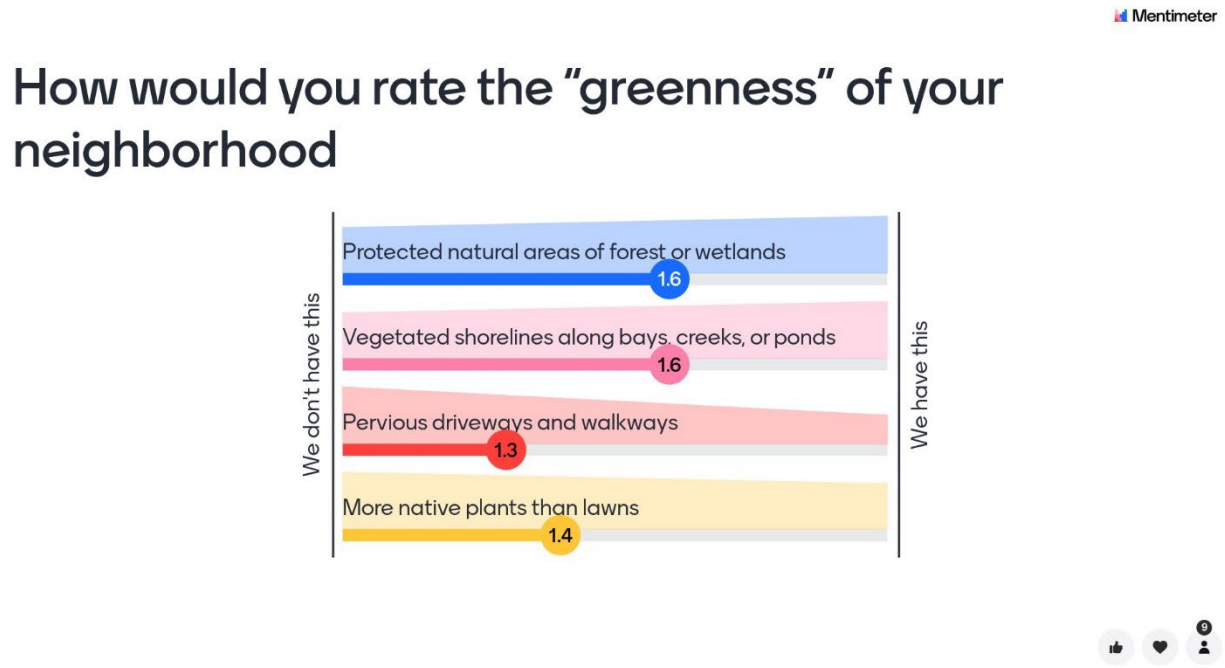
Overall, the panel emphasizes the need for a holistic understanding of the interplay between ecology, community values, and government processes to build resilient urban spaces that balance environmental conservation with human needs.

AUDIENCE POLLING

Mentimeter

What is the most interesting plant or animal you've seen in your backyard?
116 responses





3.2 STORYTELLING: FISH TALES

It takes guts and grit to make a career out of studying wild Florida. These accomplished biologists can tell you some stories you won't believe. Here are three stories. Only two are true. You decide.

3.2.1 JONO MILLER Author and Natural Historian

The story revolves around a group of individuals, including the narrator, who embark on a canoe trip down the Myakka River in Sarasota, Florida. The Myakka River has been designated as a wild and scenic river, thanks to the efforts of Bob Johnson in 1985. The narrator engages the audience by asking how many have taken advantage of this designation for activities like canoeing.

The narrator then describes the challenges of paddling on the Myakka River, ranging from fluctuating water levels to obstacles such as a nonfunctional dam, water jams, and a thorn tree. Despite having over 50 years of experience on the river, the narrator emphasizes that it's always different and presents unexpected challenges. The story introduces the audience to the beauty of the surroundings, including the visual phenomena in the shallow water and the diverse vegetation along the riverbanks.

The central conflict of the story arises when the group gets lost after diverting from the main river channel. The narrator describes the three modes of being lost: not knowing where they are, not knowing how to get back, and not knowing the route to their destination, Snook Haven. Eventually, the group finds their way back to the main stem of the river, encountering a unique phenomenon called a "sawyer," where a submerged tree trunk exhibits an up-and-down waving motion.

The story concludes by leaving the audience with the question of whether the narrative of expert explorers getting lost is a true account or just a story, setting the stage for other storytellers to share their experiences.

3.2.2 EMILY HALL, PHD Senior Scientist, Mote Marine Laboratory

The story begins with the exploration of unique underwater formations known as blue holes in the Gulf of Mexico. Jim Culter and his team of colleagues, explorers, and friends have discovered these holes, which are ancient springs and sinkholes submerged over 10,000 years ago when the Florida Peninsula was wider. These holes, ranging from a few miles to 60 miles offshore, have been identified by local fishermen and explorers like Jim.

The exploration involves advanced underwater techniques, including the use of a benthic lander, a specialized instrument that can withstand the pressures of depths exceeding 400 feet. The team studies the chemistry of these holes, noting changes in pH caused by ocean acidification, providing insights into the potential effects of climate change on marine ecosystems.

During their explorations, the team encounters diverse marine life around the blue holes, including soft corals, sea grass, and various fish species. They also find marine debris, highlighting the need for environmental conservation. The story showcases the team's efforts to understand the unique ecosystems within these underwater formations, raising questions about the future of oceans under changing environmental conditions.

One particular blue hole stands out due to its glowing hue, adding an element of mystery to the exploration. Why is the hole glowing blue? What might be found at its depths? Despite the challenges of reaching the bottom of these holes, the team continues to unravel the secrets hidden within, with the hope of answering more questions about the marine life and ecosystems thriving in these deep-sea environments. The narrative concludes with an invitation, asking if the audience would be willing to join the exploration of a glowing blue hole.

3.2.3 RANDY WELLS, PHD Director, Sarasota Dolphin Research Program

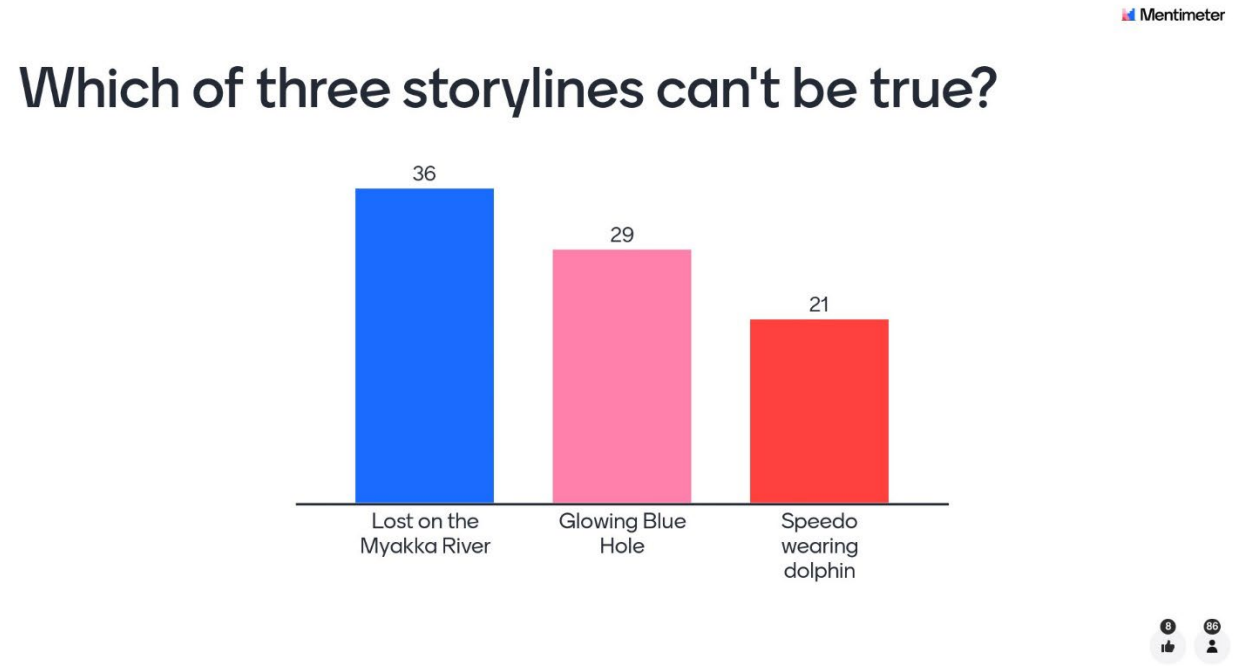
The presentation revolves around the life story of Scrappy, a long-term resident Sarasota Bay bottlenose dolphin born in 1998 to a mother named Scooby-Doo. Researchers have been studying dolphins in Sarasota Bay for 53 years and have observed Scrappy's growth and development over the years. Scrappy faced various challenges as he grew up, including learning how to interact with other dolphins, catch fish using specific techniques, and contend with natural phenomena like red tides and predators.

The narrative introduces Scrappy's transition to maturity and his partnership with another dolphin named C835. This partnership is believed to help them capture prey, protect each other from predators, and increase mating opportunities. Scrappy has been identified as a potential sire in paternity tests during health assessments.

The presentation highlights the threats dolphins face in Sarasota Bay, including the impact of trash and debris, with a major cause of dolphin mortality being fishing gear ingestion. Researchers have collected over 40,000 reports of trash, with common items being cigarettes, plastic fragments, and fishing gear.

The speaker describes how Scrappy, at one point, was found entangled in a men's Speedo bathing suit, posing a life-threatening situation. The researchers managed to rescue him, emphasizing the dangers of marine debris. The story concludes with the speaker inviting the audience to decide whether the story of Scrappy in a men’s Speedo is true. The story leaves the audience to reflect on the challenges faced by marine life in the presence of human-induced threats.

AUDIENCE POLLING



4 BILLION DOLLAR BAYS

Estuaries are engines for wildlife, fisheries, tourism, culture, real estate, and recreation. From Charlotte Harbor to Tampa Bay, our region has three of America's 28 prestigious Estuaries of National Significance. Can conservation and restoration gains keep up with impacts from population growth and climate change? What's our plan to reduce macroalgal blooms and red tide? What is the status of our fish and wildlife populations? Are we at a tipping point with pollution?

4.1 RECHARGING NATURE WITH ESTUARY RESTORATION

Award-winning Florida environmental journalist and author Craig Pittman joins the Directors of the three National Estuary Programs charged with protecting and restoring our estuaries from Estero Bay to Tampa Bay.

CRAIG PITTMAN Environmental Journalist, Florida Phoenix
ED SHERWOOD Director, Tampa Bay Estuary Program
DAVE TOMASKO, PHD Director, Sarasota Bay Estuary Program
JENNIFER HECKER Director, Coastal & Heartland National Estuary Partnership

DISCUSSION

In a panel discussion, the directors of the three adjacent National Estuary Programs began by differentiating their program areas. The speakers touched on specific issues in their regions. Dave

discussed the impact of macroalgae in Sarasota Bay, challenging traditional assessment methods and challenges related to nutrient loads, warming waters, and changes in seagrass habitats. Ed emphasized Tampa Bay's urbanization, aging infrastructure, and collaborative efforts to address environmental challenges. Jennifer highlighted problems in the Peace River Basin, including phosphate mining, agriculture, and residential sources, and common challenges like seagrass decline.

The importance of seagrass restoration was underscored, as seagrass provides habitat for fish, crabs, shrimp, stabilizes sediment, and serves as a food source for manatees and sea turtles. The decline in seagrass has widespread ecological implications, making it a critical focus for restoration efforts.

The panelists stressed the need for restoring resilient ecosystems to mitigate the impacts of climate change. Jennifer highlighted the importance of restoring habitats to enhance their adaptability to climate change, for example sea level rise causing seagrass to lose essential light to increasing depth or causing mangroves to drown due to seawalls preventing their upland migration. They discussed the potential challenges in populated coastal areas, including increased flooding on high tides and the need for communities to prepare for these changes, including potential retreat from vulnerable areas due to sea level rise, affecting property values and insurance.

Jennifer and Dave emphasized the importance of restoring the hydrology of altered tidal creeks and channelized canal conveyances. They highlighted that a significant portion of Florida's tributaries are canals and channels, and restoring habitat quality to these systems could mitigate the impacts of sea-level rise. This restoration effort aims to address the loss of nutrient attenuation and carbon sequestration in habitats that occurred during the development of channelized systems. The speakers acknowledged the uncertainty of sea level rise effects but emphasized the importance of managing nutrients to mitigate potential stressors.

The speakers emphasized the economic value of estuaries, serving as an economic engine for communities along the coast. They discussed the importance of communicating the economic benefits, such as real estate value, recreational activities, and job creation associated with water-related activities. The discussion touched on the need to talk about the significant financial commitments required for large-scale projects that can make a substantial difference, with local governments investing millions in wastewater upgrades, stormwater retrofits, and habitat restoration projects.

The discussion addressed funding sources, primarily federal appropriations to the Clean Water Act, and the significant impact of the Bipartisan Infrastructure Law, doubling federal funding for the next five years. The panelists emphasized the importance of having a blueprint for addressing place-based problems and the need for financial resources and collaborative efforts to implement restoration initiatives effectively.

The panelists discussed the ongoing efforts to designate certain rivers as wild and scenic, the establishment of new wildlife refuges, and the increasing traction of the Florida Wildlife Corridor. They acknowledged the historic moment with heightened interest and resources but emphasized the need for sustained political will and public support.

The discussion concluded with the panelists encouraging perseverance, optimism, and a channelized sense of anger to address the challenges facing Florida's estuaries. They called on the audience to be

champions, communicate with elected leaders, and advocate for sustained focus and funding for estuary restoration projects. The key takeaway was the importance of collaboration, consensus, and expanding support beyond the environmental "choir" to address the broader community.

AUDIENCE POLLING

Mentimeter

What do you love most about Florida's estuaries?
91 responses

5 12 91

Mentimeter

What do you think are the most effective public investment strategies to protect our estuaries?

3 12 83

4.2 CASE STUDIES IN BAY HABITAT AND WILDLIFE RESTORATION

From sportfish to oysters to dolphins, restoration and protection efforts are underway to support the recovery and resilience of habitat and wildlife in the face of human and climate induced pressures.

4.2.1 NATE BRENNAN, PHD Staff Scientist, Mote Marine Laboratory

The speaker discussed the formidable challenge of aligning conservation and restoration efforts for coastal fisheries with the escalating impacts of population growth and climate change. With a primary focus on developing stock enhancement technology for common snook, Dr. Brenan shared insights gained from extensive fieldwork in tidal creeks, observing the behavior and habitat utilization of these fish.

The stock enhancement program at Mote Marine Laboratory involves producing juvenile snook in hatcheries to supplement wild populations. Mote Aquaculture, about 17 miles inland, is a key research area where integrated aquaculture systems are used. Notably, the multitrophic system with zero discharge was highlighted, showcasing the recycling of wastewater to support the growth of mangroves and seagrass. This sustainable approach aims to achieve cost savings and environmental benefits.

Dr. Brenan emphasized the critical role of stock enhancement in bolstering ecosystem resilience. The case study explored the concept of introducing stocked fish at different stages and the ongoing research to determine optimal size and age for release. Leveraging the prolific reproductive capacities of marine species, the program has produced millions of fish per spawn.

Snook, integral to Florida's $8 billion recreational fishery, faces threats like cold kills, red tide, and habitat degradation. Dr. Brenan showcased Mote's groundbreaking success in closing the life cycle of snook, enabling the production of over 10,000 snook per spawn and boosting survival rates. The comprehensive tracking and monitoring of released fish, utilizing various tagging methods, yields information on size and age, movement patterns, and habitat use to assess the program's contribution to wild stocks. The presentation concluded by proposing the charismatic snook as a potential flagship species, capable of driving conservation and shoreline restoration efforts.

4.2.2 DAMON MOORE President, Oyster Reef Ecology

In the case study on oyster restoration in the Manatee River, the speaker delved into the historical context and current challenges facing oysters in the region. Oysters are vital for water filtration, fisheries improvement, habitat value, biodiversity, and cultural aesthetics. However, approximately 85% of oysters worldwide have vanished. The focus shifted to the Manatee River, where oysters were once abundant but significantly declined by the early 1900s.

Shifting baselines became a central theme as the speaker explored historical references, such as a letter from 1793 calling the Manatee River the "River of Oysters." Commercial oyster trade, documented in newspapers from 1876, highlighted the economic significance of oysters in the region. However, over time, excessive harvesting, usage of oyster shells for construction, and dredging for aggregate materials led to the depletion of oyster beds.

The speaker emphasized the need for large-scale oyster restoration projects, citing the history of dredging leases and the significant loss of oyster habitat. Despite the challenges, the speaker proposed innovative solutions, such as using vertical oyster gardens and bog anchor sticks, which could be more

cost-effective than traditional methods. The importance of thinking at a larger scale and considering cost implications was underscored, with a comparison of restoration costs highlighting the potential for more efficient and economical methods.

Manatee County's pursuit of oyster restoration projects, including aquaculture leases, was acknowledged, and the speaker expressed gratitude for the collaboration in addressing this critical issue. The case study aimed to raise awareness about the historical decline of oysters, the impact on ecosystems, and the potential for cost-effective restoration efforts in the Manatee River.

4.2.3 KATIE MCHUGH, PHD Staff Scientist, Sarasota Dolphin Research Program

The Sarasota Dolphin Research Program, initiated in 1970, stands out as the world's longest-running dolphin conservation research program. Monitoring over 50 years has provided insights into the resilience of the local dolphin population amidst environmental changes, including significant human population growth. The program's data played a crucial role during the Deepwater Horizon incident, offering a reference for assessing impacts on dolphin populations.

Concurrent long-term monitoring of the dolphin’s prey species proved essential for establishing baselines, especially in the face of unpredictable disturbance events. Seasonal multispecies fish sampling was initiated in 2004, to monitor temporal changes in fish abundance, diversity, and size structure. The data collected over almost two decades have been instrumental in understanding the effects of red tide on dolphin prey fish and the bay's resiliency in recovering from such events. The recovery of fish populations, though taking about a year post-bloom, showcases the bay's remarkable resilience.

In addition to direct monitoring, the case study highlighted the increasing focus on acoustic monitoring. The Sarasota Bay listening network, with hydrophone stations strategically placed, allows continuous tracking of animal sounds. This includes the distinctive whistles of over 269 different dolphins, offering a unique perspective on their behavior. Acoustic monitoring also extends to studying the impact of human-made noise on dolphin habitat use.

Furthermore, the Sarasota Coast Acoustic Network, involving tagging and underwater receivers, has tracked 13 species and facilitated collaboration with regional networks. This collaboration proved vital in understanding the movement patterns of species during disturbance events, such as red tide. The case study emphasized the significance of collaborative telemetry networks in sharing data across spatial scales.

Lastly, the speaker acknowledged the importance of long-term monitoring in supporting the next generation of conservation scientists. Students gain hands-on experience with monitoring technologies, ensuring the continuation of these crucial programs into the future. The case study concluded with gratitude towards local supporters who have recognized the benefits of such monitoring programs for understanding the health of Sarasota Bay.

4.3 Case Studies of Community In Action Protecting Wildlife

Community-driven initiatives are energized and making a difference across the Suncoast. Meet some of the heroes from 100% volunteer run organizations who work the early, late and weekend shifts to protect wildlife.

4.3.1 RONDA RYAN Executive Director, Sarasota Bay Watch

Sarasota Baywatch, a community-funded and volunteer-driven organization, is actively involved in marine debris cleanup efforts in Southwest Florida. Marine debris poses a significant environmental challenge in the region. Key contributors to marine debris include fishing and boating debris, as well as household trash. Plastics constitute a major concern, with 2,600 lbs retrieved in 2023, highlighting the pervasive nature of plastic pollution. Sarasota Baywatch collaborates with dive groups like the Sun Coast Reef Rovers and Sun Coast Aqua Ventures, collectively retrieving 39,900 lbs of marine debris in 2023. The debris is sourced from offshore areas, jetties, bridges, islands, shorelines, parks, and bay fronts.

Sarasota Baywatch's approach involves community partnerships and inclusivity, engaging people of all ages and abilities, including students. The organization stresses the importance of responsible actions, such as using waste receptacles and safely handling entangled wildlife. They tackle specific issues like derelict fishing gear (DFG), with 272 anchors and significant amounts of fishing line retrieved in 2023. Other notable debris categories include styrofoam, tires (4,500 lbs retrieved in 2023), and abandoned fishing gear causing habitat damage.

Sarasota Baywatch aims to create environmental heroes by fostering inclusivity and raising awareness about the impact of marine debris. The organization highlights the preventive aspect, emphasizing that daily efforts are crucial to protect animals and the environment from the threats posed by man-made marine debris. Ultimately, the call to action is to collectively clean up our backyards and address the ongoing challenges of marine debris in the region.

4.3.2 HOWARD HOCHHALTER Director, Suncoast Stargazers

This case study highlights the often overlooked impact of artificial light on the environment and wildlife. Light pollution is a byproduct of industrial civilization. With 80% of the world's population residing in cities, urban areas become significant sources of light pollution, affecting the night sky and wildlife. The study identifies four areas where light pollution has measurable harmful effects: climate and energy, wildlife and ecosystems, human health, and the preservation of the night sky heritage.

Light pollution has a devastating impact on sea turtles, whose nesting patterns are disrupted by artificial lights on beaches, resulting in confusion, disorientation, and a significant number of deaths annually. Furthermore, the case study reveals how light pollution affects nocturnal birds and insects, disrupting their natural behaviors and leading to millions of bird collisions with illuminated buildings. As another example, the decline in firefly populations is also attributed to competing light pollution in their habitats. Surprisingly, the study connects light pollution to human health issues, including disrupted sleep patterns and an increased risk of diseases such as cancer, sleep disorders, depression, obesity, and heart disease.

The case study concludes by emphasizing the importance of addressing light pollution for the preservation of our night sky heritage. It highlights the significant carbon dioxide emissions associated

with outdoor light wastage and proposes a simple yet impactful solution: eliminating unnecessary outdoor lighting. The study acknowledges the cultural challenge of convincing people to prioritize darkness but underscores the immediate benefits of restoring natural darkness to the environment. Finally, it recommends reaching out to organizations such as the International Dark Sky Association for more information and support in combating light pollution.

4.3.3 KYLIE WILSON Shorebird Coordinator, Florida Audubon (seasonal)

Kylie Wilson, the shorebird coordinator for Audubon Florida in Sarasota, shared her experience and insights on citizen action to protect wildlife, focusing on beach nesting species. Kylie, a Sarasota native with a background in biology, emphasized the importance of pursuing one's passion and highlighted her journey from aspiring marine biologist to becoming a dedicated bird enthusiast.

In her presentation, Kylie discussed sea turtles, particularly the loggerhead species dominating local nesting. With data from colleagues, she reported between 95-99% nests in Sarasota County are loggerheads, with 4,284 nests this season, four times the number in the 2000's. Sea turtle volunteers played a crucial role, with about 250 dedicated individuals conducting patrols during civil twilight hours.

Shifting to shorebirds and seabirds, Kylie covered the American oystercatcher, snowy plover, black skimmer, and least tern. While acknowledging the decline in solitary nesting shorebirds, she celebrated the success of the black skimmer and least tern colonies on Lido Key. Volunteer efforts contributed significantly to protecting these species from threats like erosion, beach development, human disturbance, pollution, and predation.

Kylie urged people to get involved and volunteer, highlighting the bird stewarding program as an accessible way to contribute. She emphasized the importance of education, encouraging beachgoers to be respectful and to report environmental infractions. In closing, Kylie shared a powerful quote emphasizing that experiences lead to caring and caring leads to protecting, urging everyone to share this message beyond the passionate environmentalist community.

4.4 STORYTELLING: CULTURAL STORIES FROM THE ESTUARY

The stories we tell define our culture - who we are and what we believe is possible. These storytellers explore relationships with our watery world: our political, divine, and cultural right to coexist and flourish together.

4.4.1 JOE BONASIA Chair/SWFL Regional Director, Florida Rights of Nature Network

The story revolves around the Glover Bite Trail in Cape Coral, an area known for its mangrove wetlands. The narrator describes the trail's unique features, including a pungent smell, and recounts conversations with different individuals who find solace and inspiration in the natural surroundings. One encounter involves a retired professor caring for his adult son, who views the trail as a place for new beginnings. Another conversation with a visitor from Massachusetts reveals a shared appreciation for the peace and beauty of the location. The narrator also speaks to a young woman who considers Glover Bite her "soulcation," emphasizing the restorative and inspiring nature of the place.

As the narrative unfolds, the focus shifts to a broader issue affecting the environment. In 2020, Orange County voters overwhelmingly amended their County Charter to grant citizens the right to clean water

and recognized the rights of waterways to exist without pollution. However, subsequent legislative actions in Florida revoked these rights, stripping local governments of the authority to protect nature. The story highlights a legal battle in Montana, where environmental rights at the constitutional level enabled young activists to challenge fossil fuel-friendly laws successfully.

The narrator brings the story back to Cape Coral, expressing concern about potential development near the wetlands and the lack of legal tools to prevent harm. The narrative concludes with a call to action, referencing efforts to amend the state constitution in Florida to grant all citizens a fundamental right to clean and healthy waters. Despite falling short for the 2024 ballot, the grassroots movement remains optimistic about the 2026 campaign, emphasizing the importance of recognizing environmental rights for the sake of nature, ourselves, and future generations.

4.4.2 RABBI ED ROSENTHAL Executive Director, Repair the Sea

A rabbi addresses the audience, explaining the unique perspective he brings as a clergyman interested in the intersection of faith and science and his journey to understand the lack of faith-based environmentalism, especially regarding the marine environment. Drawing inspiration from Carl Sagan's idea that science and spirituality are not mutually exclusive, the rabbi shares his personal connection to water, particularly the ocean, and the spiritual experiences people often feel near bodies of water.

The rabbi embarks on a profound exploration into the spiritual significance of water, particularly the ocean, within various faith traditions. Citing religious texts, he uncovers the divine presence in water, emphasizing its role as God's creation. Despite this reverence, the rabbi laments the paradox of humanity desecrating the seas, treating them with disregard through the rampant dumping of pollutants and plastics.

Quoting Gus Beth, the co-founder of the Natural Resources Defense Council, the rabbi highlights that the real environmental problems are selfishness, greed, and apathy, calling for a cultural and spiritual transformation. Through religious lenses, the rabbi urges faith-based organizations to embrace eco-friendly practices, offering a tangible solution through his organization Repair the Sea that provides grants to faith organizations to replace plastic with compostable cutlery. He challenges the audience to view the seas as sacred and advocate for their preservation as an act of spiritual responsibility.

4.4.3 JOHN MCCARTHY Vice President for Regional History, Marie Selby Botanical Gardens

This heartfelt and powerful narrative portrays the perspective of an estuary, described as the lifeblood that has allowed civilization to thrive on the planet. The estuary speaks of its dynamic existence, always on the move and surviving numerous changes. It highlights the symbiotic relationships it has with various elements—sand on the west side, mangroves, and marsh on the east. The estuary emphasizes its role as a nursery, kitchen, and dining room, supporting a diverse ecosystem, including fish, crabs, worms, and feathered friends.

As the estuary reflects on its long history, it expresses concern and distress about the changes it has witnessed in recent times. The narrative takes a poignant turn as the estuary recounts the impact of human activities, such as overfishing, habitat destruction, and pollution. The estuary mourns the loss of its once-abundant marine life, the encroachment of seawalls, and the dumping of sewage, which threatens its survival.

Despite the challenges, the estuary acknowledges the efforts of some individuals who understand its plight and are working to heal its wounds. However, it issues a warning to society, cautioning that if the current trajectory continues, it is not the estuary that will disappear but humanity itself. The estuary, a symbol of prosperity for Sarasota, becomes a poignant reminder of the delicate balance between human activities and environmental sustainability.

5 IT'S ALL ABOUT CLEAN WATER

There is no new water on earth, only the same raindrops cycled over and over again. The water we drink and use to wash, flush, and irrigate is borrowed from the environment. In turn, whatever we put on land, or down the drain, eventually winds up back in our waters. How can we follow nature's example for building efficient and resilient wastewater and stormwater systems that protect our water supply and prevent pollution? There are smart ways to keep us and our waterways healthy, in an endless cycle.

5.1 REDUCING POLLUTION WITH HOLISTIC WATER MANAGEMENT

Erica Gies has been around the world as a National Geographic Explorer and journalist collecting stories about water, society and climate change captured in her book *Water Always Wins*. She joins a trio of regional water professionals to discuss our water future.

ERICA GIES Author and Journalist
MAYA BURKE Assistant Director, Tampa Bay Estuary Program
AMANDA BOONE Project Engineer, Woodard & Curran
JACLYN LOPEZ, JD Assistant Professor, Stetson College of Law

Gies is an independent journalist and one of the few attendees not from Florida. In her opening lecture, she emphasized the significance of storytelling in journalism and its role in shaping values. The focus of her reporting, as discussed in their book *Water Always Wins*, centered on the dominant culture's view of water as either a commodity or a threat, and the ineffective attempts to control it.

The speaker shared her experiences from various locations worldwide, including Iraq, Washington State, China, Peru, Kenya, England, India, and California. In these places, they encountered people changing the cultural perspective on water and innovating ways to work with it. Despite the increasing challenges of floods, droughts, and pollution, the existing cultural mindset around water is not inherently human.

A major part of the lecture focused on the Madon people of Iraq, who have a 9,000-year history of living on marshes without draining or filling them. The longevity of their culture is attributed to their unique relationship with water. The speaker then discussed climate change, emphasizing that floods and droughts are exacerbated not only by climate change but also by problematic development choices, including urban sprawl and concrete control-oriented water management.

The speaker critiqued conventional solutions like levees and dams, highlighting their environmental justice issues and false sense of security. They advocated for working with existing water resources and introduced the concept of "slow water movement," which involves returning to natural systems prone to development.

Several projects were discussed, including the restoration of Thorton Creek in Seattle, where the city rebuilt the missing hyporheic zone underneath the stream. Another example was the restoration of marshes in San Francisco Bay to address sea level rise, emphasizing the importance of historical ecology in understanding water patterns.

The lecture concluded by highlighting the need for a shift in economic analysis, considering all costs and benefits associated with water management. The speaker emphasized that healthy ecosystems can maintain themselves and protect communities, calling for a change in the approach to solving water-related problems worldwide.

DISCUSSION

Panelists Maya Burke, Amanda Boon, and Jacqueline Lopez discuss various concerns related to water management, including stormwater, drinking water safety, and pollution in water bodies. The speakers explore potential solutions, including upgrading wastewater treatment, adopting nature-based stormwater treatment, and restoring ecosystems like wetlands, mangroves, and seagrasses.

Maya Burke emphasizes the cultural shift needed to address water management. She explored the potential of a cultural shift by sharing her personal experience of witnessing changes in wastewater regulations that resulted in an environmental recovery in the late 70s and early 80s. The recent backsliding on water pollution comes from the emphasis on disposing of water, getting it out and away, rather than managing at the landscape level to slow it down and clean it up.

The speakers agreed on the need for a holistic approach to water quality, addressing the entire landscape and even atmospheric sources of water pollution. They discussed the concept of "one water," emphasizing that all water is interconnected—stormwater and drinking water and wastewater—so it should be managed as a resource not as a nuisance or waste product. They highlighted the role of local communities, water management districts, and estuary programs in fostering collaboration and innovative solutions, citing regional restoration and stormwater improvement projects.

Jacqueline, approaching the issue from a legal perspective, pointed out that the lack of thoughtful planning and policies contributed to water quality problems in Florida. She highlighted the challenges arising from uncontrolled growth, the need for better policies at the local level, and expressed concern about rollbacks in wetlands protection at the local, state and federal levels. Jacqueline raised concerns about state-level attempts to hinder local control over projects and management strategies and emphasized the need for policies empowering local municipalities to collaborate on watershed issues.

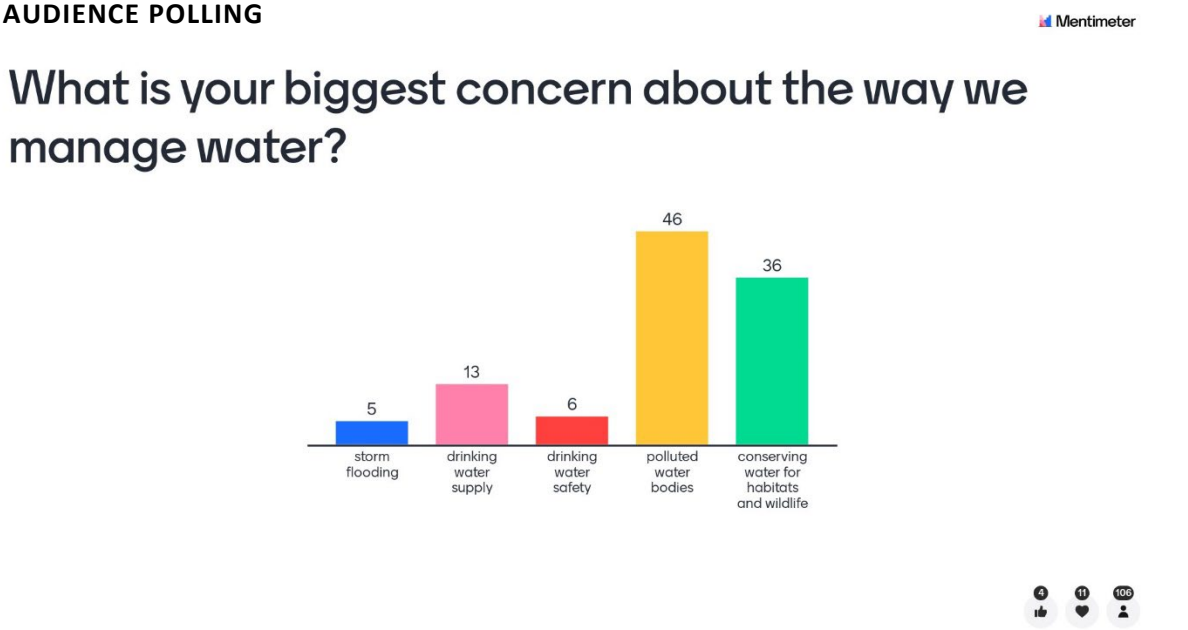
Amanda discussed the prevalence of stormwater treatment ponds in Sarasota County and their original intent to treat stormwater. However, she highlighted the current functional issues with these ponds, such as nutrient release due to lack of maintenance. Amanda advocated for retrofitting these ponds with nature-based solutions, including wetland plants, to enhance their effectiveness in treating stormwater.

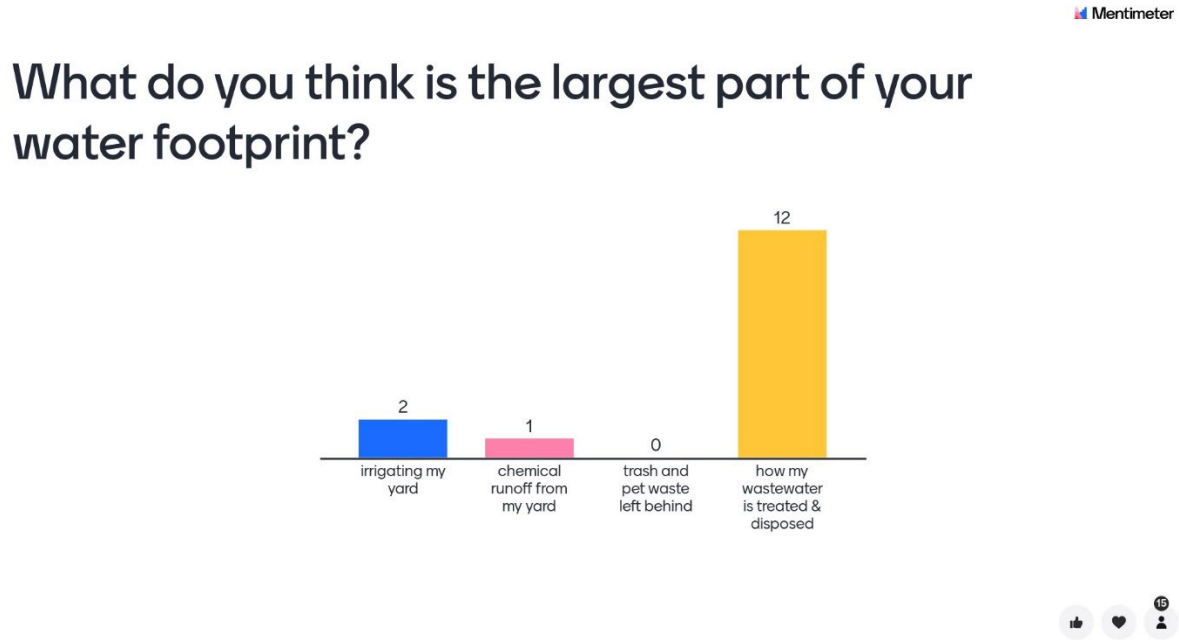
Climate change's impact on pollution issues and seawater intrusion in drinking water was also discussed. Changes in rainfall patterns and rising sea levels complicate water quality management, creating compounding stressors for infrastructure engineered for different conditions. The conversation then shifted to the role of nature-based solutions in water infrastructure. The speakers advocated for a shift

towards more natural maintenance practices, reducing reliance on concrete infrastructure and embracing nature-based solutions that require less maintenance. They discussed the importance of managing invasive species and supporting natural processes.

The conversation concluded with a call for individual actions, such as getting rid of lawns, going native with plant choices, and challenging perceptions about water reuse and clean water. The importance of engaging with local elected officials and participating in broader systemic changes through representative democracy and voting was emphasized.

AUDIENCE POLLING





5.2 Case Studies in Water Management and Resilience

Building communities using last century's techniques leads to the flooding and water pollution that those techniques were designed to prevent. Case studies show how nature-based water management techniques can help us adapt to a changing future.

5.2.1 SANDY GILBERT Chair, Solutions To Avoid Red Tide

This case study highlights the environmental impact of inadequate stormwater management in Sarasota Bay and successful interventions. The elevated levels of nitrogen, contributing to red tide, and a 30% reduction in seagrass coverage underscore the pressing need for effective stormwater pond maintenance. With stormwater runoff accounting for 65% of excess nutrients in the bay, the study emphasizes the urgency of addressing the inefficiencies in stormwater pond management.

The Healthy Pond Collaborative aims to provide free assessments to neighborhoods with stormwater ponds over ten years old. The case study distinguishes natural lakes from engineered stormwater ponds and emphasizes the three key functions of stormwater ponds: flood control, nutrient filtration, and wildlife habitat. These functions rely on dense shoreline and littoral zone plantings, often missing from poorly maintained ponds.

The case study cites examples of successful interventions, including the implementation of a "no mow zone" and the introduction of aquatic plants to improve stormwater pond nutrient removal efficiency. Data from a community in Sarasota County demonstrates a significant reduction in nitrogen levels after implementing such measures. Additionally, the study discusses the cost-effectiveness of these interventions, suggesting that they can save communities money in the long run by protecting ponds banks from erosion, while enhancing water quality and protecting property values.

Communities are urged to contact the Healthy Pond Collaborative for assistance, as demonstrated by the positive results achieved in over 100 different communities within the past two and a half years. The availability of the Healthy Pond Guide online provides a valuable resource for communities seeking guidance on improving stormwater pond management.

5.2.2 RICHARD MOORE, PHD Board Director, Suncoast Waterkeeper (on behalf of Abbey Tyrna)

The case study focused on the environmental issues related to per- and polyfluoroalkyl substances (PFAS) in the waters of the Suncoast Area of Florida. PFAS are man-made chemicals with widespread use in various products, including non-stick cookware, clothing, fire retardants, and more. The speaker highlighted three major attributes of concern: the widespread presence of PFAS, their persistence in the environment (earning them the label "forever chemicals"), and their bioaccumulative nature, linked to adverse health effects.

To substantiate their concerns, the speaker referred to a national study led by the Waterkeeper Alliance, where 114 waterways in 34 states and the District of Columbia were sampled for PFAS. The results indicated the presence of PFAS in 29 states and 83% of the sampled waterways. Locally, Suncoast Waterkeeper participated in the study and found high concentrations of PFAS in Boles Creek, a tributary of Sarasota Bay.

The case study further discussed the slow regulatory response by the Environmental Protection Agency (EPA) to address PFAS contamination. The EPA proposed drinking water standards for PFAS in March 2023, listing six contaminants for regulation. However, concerns were raised about the limited number of regulated contaminants compared to the estimated thousands of PFAS types. The proposed maximum contaminant level (MCL) was set at 4.0 parts per trillion for the top two contaminants, with criticism regarding the compromise made to balance cost considerations.

The speaker concluded by emphasizing the need for continued testing, source identification, and discharge reduction efforts locally. They also urged individuals to be proactive by making informed consumer choices, considering in-home treatment for public drinking water, and advocating for stronger regulations. The presentation highlighted ongoing efforts by Suncoast Waterkeeper to monitor and address PFAS issues and encouraged public engagement through their website and social media channels.

5.2.3 BOB BUNTING CEO, Climate Adaptation Center

The case study underscores the profound threats posed by climate change, particularly in relation to water-related challenges. The presented data reveals a stark increase in global temperatures since the late 1800s, with the most significant warming observed since 1990. The year 2023 already sets all-time high temperatures worldwide for both oceans and the atmosphere. The study delves into the impact of this rapid warming on water systems, emphasizing the threefold threat of extreme precipitation, storm surge, and sea level rise.

Sarasota's experience includes a record inland flood caused by Hurricane Ian, resulting in 22 inches of rain in a single day. The study highlights the interconnectedness of climate extremes, where dry periods lead to the collection of nutrients on the mainland, exacerbating water quality issues during heavy rainfall. The resultant nutrient-rich freshwater entering the Gulf of Mexico contributes to harmful algae blooms, affecting marine life and causing respiratory issues in humans.

The case study further explores the increasing frequency and intensity of hurricanes, storm surges, and sea-level rise. Visuals and forecasts illustrate the vulnerability of coastal areas to storm surges, with tens of thousands of people living in areas projected to be underwater during a moderate hurricane. The escalating impacts, including property damage, rising insurance costs, and intensified storm surges, emphasize the economic consequences of a changing climate. The looming threat of sea-level rise, compounded by slowing jet streams and more intense hurricanes, paints a grim picture for the future, especially for low-lying areas like Florida.

The study concludes with a call to action, urging collective responsibility and participation in mitigating the impacts of climate change. It emphasizes the urgency of preparing for the impending challenges, including the intensification of storm surges in the 2030s. The connection between climate change and water quality issues is underscored, emphasizing the need for education and proactive measures to safeguard future generations.

6 When Pollution Is Personal

6.1 Reducing Personal Pollution: Don't Let Waste Go to Waste

Home is where we produce most of our trash – about three pounds per adult per day. How can we create less waste in the first place by refusing, reducing, reusing, repurposing and recycling —so we don't let waste go to waste? What do we do with all this stuff? From throw-away containers, to worn out household goods, to unwanted food, these waste streams can be redirected to good use and reused as materials that feed the circular economy.

SARAH DEARMAN CIO, The Recycling Partnership
DONN GITHENS President, Goodwill Manasota
MIKE KELCOURSE CEO, Compost Jax
EMILY GRANT Florida Program Manager, MEANS Database
ZACK RASMUSSEN Manager, Gamble Creek Farms

Dearman's opening lecture began by prompting the audience to reflect on their favorite places and views in the Sun Coast area, emphasizing the beauty of the blue sky, green trees, and water. However, it transitioned into addressing the harsh reality of landfills, specifically mentioning that the landfill in Sarasota has been approved to reach a height of 200 feet, more than twice as tall as the tallest native tree in Florida.

The speaker delved into the issue of waste generation, highlighting that the average American produces 2,000 pounds of waste annually, totaling 90,000 pounds over a lifetime. Organic waste, including food and yard waste, was identified as a significant portion of landfill content. The lecture stressed the importance of recycling and introduced the concept of reducing material usage to address the challenges associated with landfills.

Recycling, a key focus of the talk, was acknowledged as facing challenges and criticism in recent headlines. The speaker discussed the need for society to use fewer materials and emphasized the importance of reusable items, citing examples like reusable water bottles and bags. The recycling of different materials, such as plastics, cardboard, glass bottles, aluminum cans, and paper, was explored, with a focus on the recyclability rates and challenges associated with each.

The conversation shifted to the accessibility of recycling, with the speaker revealing that many communities across the country lack access to recycling facilities. The presentation acknowledged the confusion surrounding recycling practices, citing the example of pizza boxes and the varying opinions on their recyclability. The organization's efforts to align stakeholders, including material producers, sorting facilities, and communities, were discussed to reduce confusion and improve recycling programs.

The lecture concluded with the introduction of a new online tool designed to help individuals determine recyclability based on their location. The audience was encouraged to make sustainable choices, including reducing material usage and reusing items. The importance of collective efforts to protect the environment and landscapes was highlighted, supported by the statistic that 78% of people believe in

recycling. The panel discussion promised further exploration of waste-related opportunities and actions that individuals can take.

DISCUSSION

Panelists shared their perspectives on various aspects of waste management. The discussion showcased diverse perspectives on waste reduction, emphasizing the environmental, social, and economic benefits of effective waste management practices that cycle waste streams back into productive uses.

Mike Kelcourse, CEO of Compost Jax, discussed the significant opportunity in addressing organic waste. According to EPA data, over 30% of landfills are filled with organic waste, including food, agricultural, and yard waste. Mike emphasized the environmental impact, noting that this organic material contributes to 65% of methane emissions from landfills. He highlighted the need for infrastructure to divert organic waste from landfills, with progress and growth in this area. The lengthy permitting and zoning process for waste facilities is a significant challenge.

Don Githens, President and CEO of Goodwill Manasota, spoke about their donations to jobs model, with a million donations and two million transactions in its stores annually. Goodwill receives items such as furniture, clothing, electronics, and Christmas lights. Don explained their evaluation process to determine if items are sellable and that unsold items are diverted from landfills through recycling or repurposing. He emphasized the importance of creating jobs and funding their mission through the resale of donated goods. Don emphasized community support, detailing initiatives like partnering with food banks and supporting veterans, showcasing the broader impact beyond the stores.

Emily Grant, Florida Program Manager for the MEANS Database, shared insights into food recovery. MEANS facilitates the donation of excess food from events, restaurants, and farms to nonprofits. Emily highlighted the impact of their platform in recovering nearly 14 million pounds of food in Florida over the last two years. She emphasized the importance of the Food Donation Improvement Act, providing liability coverage for food donations and supporting the redistribution of edible food before considering composting.

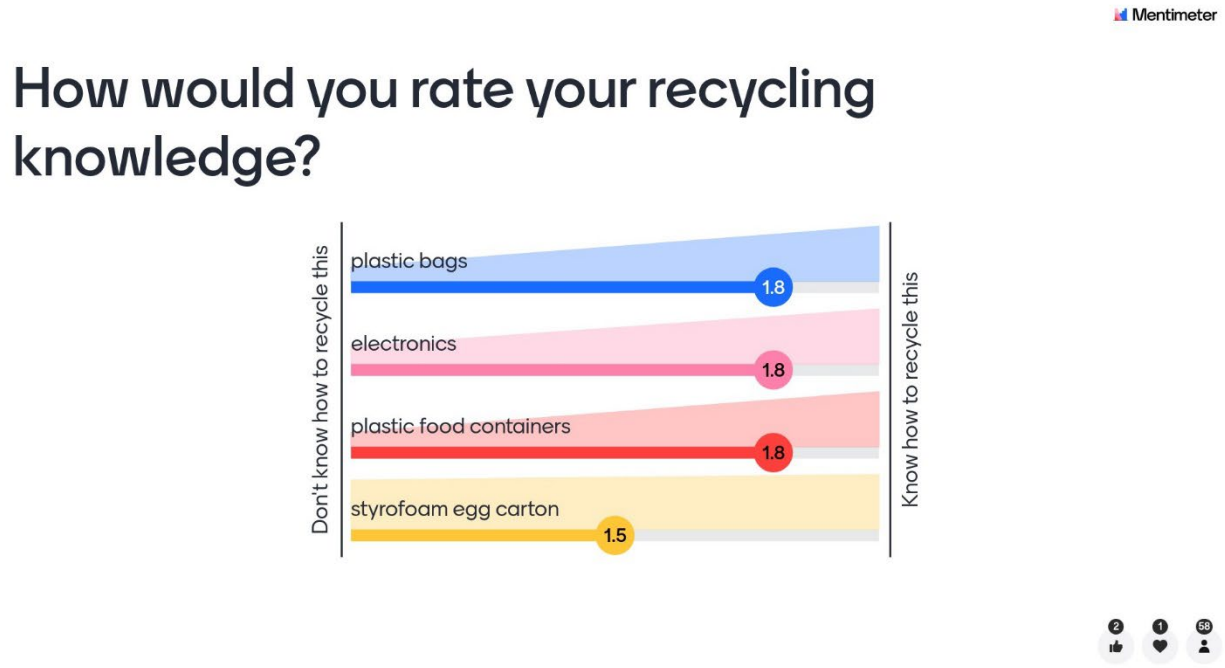
Zach Rasmussen, Manager of Gamble Creek Farms, discussed their organic farm's innovative approach to waste management. Beyond composting, the farm utilizes vermiculture, fermentation, and extracts to repurpose waste. Zach explained their unique methods, such as using seafood waste for fermentation and creating water-soluble nutrients from pyrolyzed bones. He emphasized the farm's commitment to honoring animals by utilizing every part of them. He emphasized the potential of utilizing waste items to enhance soil health and plant productivity.

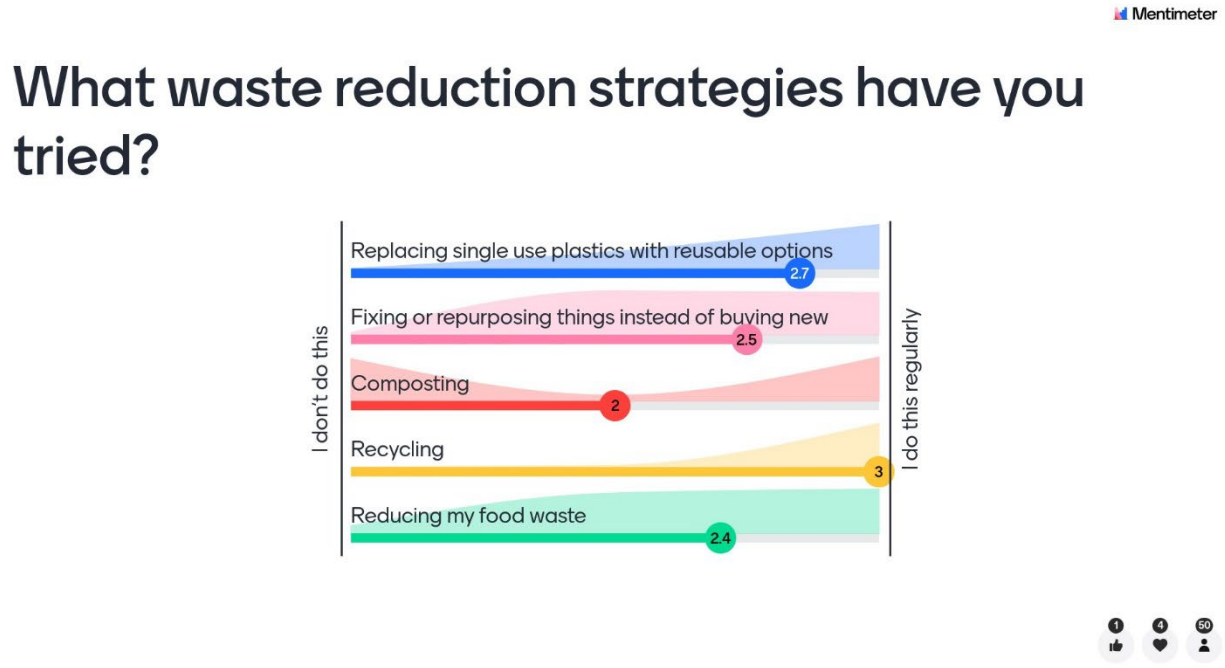
The panel also touched on the importance of community engagement and education, with Zach mentioning Gamble Creek Farm's educational programs for local school kids. The discussion also touched on recycling knowledge, with practical tips on what can and cannot be recycled, addressing common questions.

Emily addressed practical strategies for individuals to prevent food waste. She encouraged meal planning, batch cooking, and understanding date labels. Emily suggested embracing imperfect foods, supporting local farmers, and advocating for policies that impact food disposal at a systemic level. She emphasized the interconnectedness of individual actions and the broader waste reduction landscape.

The panelists concluded with a call to action, urging individuals to compost at home, use reusable bags, and prioritize local purchases, emphasizing the collective impact of small individual actions in creating positive change.

AUDIENCE POLLING





6.2 Reducing Personal Pollution: Efficient and Renewable Energy Use

Homeowners play a big role in reducing carbon pollution because our homes consume more than half of all Florida's electricity. Improving home energy efficiency to reduce energy use and installing home rooftop solar for clean renewable energy is easier than you think. Energy experts on policy, financing, solar, transportation, and home improvement, provide myth-busting advice for transitioning your lifestyle to the carbon and cost savings of energy efficiency and renewable energy.

SUSAN GLICKMAN Energy Consultant
BILL JOHNSON President, Brilliant Harvest
LEE HAYES BYRON Director, Sarasota County UF/IFAS Extension & Sustainability
DUANNE ANDRADE Executive Director, Solar & Energy Loan Fund (SELF)
AMBER WHITTLE, PHD Executive Director, Southface Sarasota

In Glickman's opening lecture on climate change and clean energy solutions, the speaker began by emphasizing the urgency of addressing climate change locally. Drawing inspiration from F. Scott Fitzgerald's quote on intelligence, the speaker stressed the need to hold opposing ideas – acknowledging the severity of the climate crisis while actively working to improve it.

The lecture highlighted alarming facts, such as the current carbon levels at 48.82 parts per million in the atmosphere, and projections indicating a potential 2.5 degrees Celsius temperature increase by 2030. the world is already 1.2 degrees warmer than in 1990. The speaker emphasized the importance of understanding the impact, not just in degrees but also in tangible terms, like sea-level rise. Tipping points, identified in a carbon tracker report, included the collapse of ice sheets, permafrost thawing, and coral reef death, underscoring the urgency to reduce emissions drastically.

On a positive note, the speaker pointed out the potential provided by recent federal legislation, such as the historic Inflation Reduction Act and the Bipartisan Infrastructure Law. These laws are expected to enable the development of a clean energy economy. Local initiatives, like Sarasota County's EPA greenhouse gas reduction plan, were highlighted as crucial steps towards utilizing available funding and driving progress.

Despite the potential benefits of funding, the speaker cautioned that there's still a gap between reductions and the necessary targets. The economic viability of Florida, heavily dependent on tourism, agriculture, construction, and real estate, was emphasized, linking it to the state's ability to withstand rising sea levels and temperature increases.

The encouraging news included the decline in solar and battery costs by 80% and the increase in renewable energy's contribution to electricity generation. Despite this, the speaker highlighted the lack of political will in Florida's energy transition and criticized the state's policy as akin to mopping up without turning off the faucet. Energy efficiency and electrification of transportation were identified as key components of a sustainable future, with the speaker expressing optimism about the potential of wind, water, and solar solutions.

In concluding the lecture, the speaker encouraged individual action and emphasized the need for global, federal, and state-level policies to address climate change effectively. While acknowledging the severity of the issue, the lecture aimed to instill optimism by underscoring that 90% of the solutions are already

available, urging prompt and collective action. The upcoming panel discussion promised success stories and practical steps towards a cleaner and more sustainable future.

DISCUSSION

The panel discussion on clean energy solutions covered various aspects of energy efficiency, renewable energy, and success stories from different perspectives. The discussion began with a focus on energy efficiency before delving into solar energy. The panel emphasized the importance of reducing personal pollution and increasing renewable energy use.

Duannne, the executive director of the Solar Energy Loan Fund, shared insights into the organization's origin and mission. The fund was established in 2009 as a non-profit lender and green bank to stimulate the economy after the housing market crash. Dwan highlighted their focus on serving low and moderate-income populations, providing access to low-cost capital for clean energy projects, and their success in securing loans for projects such as rooftop solar.

Lee Hayes discussed Sarasota County's energy coaching program aimed at helping low-income families reduce utility bills. Volunteers assess homes for efficiency opportunities, educate residents on bill reading and behavior changes, and install efficiency devices. The program has assisted 6,500 people, resulting in significant annual savings for those in need.

Amber from Southface emphasized the importance of addressing energy efficiency in buildings, stating that buildings account for about 40% of energy usage. Southface's "Good Use" program focuses on helping nonprofits improve energy efficiency, leading to $25 million in annual savings and the ability to serve 2.7 million more meals.

Bill, with experience in the solar industry, highlighted the difference between utility-scale solar and rooftop solar. He emphasized the need for both approaches, citing rooftop solar's benefits in terms of resiliency and avoiding grid transmission losses. Bill stressed the importance of maintaining policies like net metering to support rooftop solar. He also discussed advancements, including the Tesla roof tile system, and emphasized the significance of battery technology, citing successful cases during hurricanes.

Challenges highlighted by the panelists include uneven application of building codes, particularly for mobile homes, emphasizing the need for standardization and safety. Amber discussed workforce needs and green job development. Lee Hayes delved into transportation's impact on Sarasota County's greenhouse gas emissions and suggested ways to reduce carbon footprints.

The panel concluded with success stories, with Duanne sharing a heartwarming story of an 80-year-old widow named Caroline. Facing challenges due to lack of credit and a broken air conditioner, Caroline received assistance from the Solar Energy Loan Fund, improving her quality of life and highlighting the personal impact of clean energy initiatives. Lee Hayes highlighted their efforts in teaching classes on energy efficiency, solar, and green living, sharing success stories of individuals implementing eco-friendly measures.

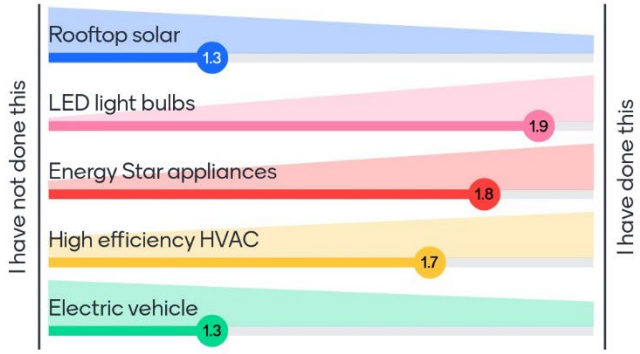
In summary, the panel covered a range of topics including building codes, energy efficiency, solar advancements, challenges in the industry, transportation's environmental impact, and the crucial role of workforce development in the transition to clean energy. The speakers emphasized the importance of

technology, mainstreaming green practices, and fostering partnerships to facilitate access to capital and develop a skilled workforce.

AUDIENCE POLLING

Mentimeter

What actions have you taken to increase your energy savings?



Mentimeter

What is your largest barrier to adopting energy efficient strategies in your lifestyle?