



# Dr. John M. DeGrove Webinar Series: Advancing Nature-Based Solutions for Hazard Mitigation

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we only apply for professional certification credits  
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Educate, advocate and negotiate  
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# Dr. John M. DeGrove

May 4, 1924 – April 13, 2012

Icon of comprehensive planning  
both in Florida and across the nation

Co-founder of 1000 Friends of  
Florida

To find out more, please visit:  
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# This webinar has been approved for:

*Planners (1.5 AICP CM #9192437)*

*Florida attorneys (2 CLE #1909795N)*

*Florida Certified Environmental Health Professionals (.10 CEUs)*

*Florida Certified Floodplain Managers (1 CEC)*

*In the follow up email for the LIVE WEBINAR you will receive:*

A link to a **brief survey** to help us improve future webinars

A certificate of attendance



# For Landscape Architects:

1000 Friends has not yet received certification information from the DBPR. We will post an update at <https://1000fof.org/upcoming-webinars/credits/>

If credits are approved, 1000 Friends only provides certificates of attendance for those who attend the live webinar

1. In the follow up email sent an hour after the live webinar you will receive a certificate of attendance
2. Use Google Chrome to download the certificate
3. Add the course number, provider number and your number to the certificate
4. Submit the certificate yourself to DBPR

*Florida landscape architects (1000 Friends' provider # PVD151)*





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# Dr. John M. DeGrove Webinar Series

- February 19 – 2020 Florida Legislative Update
- March 11 – The Economics of Development in Florida
- April 15 – 2020 Florida Legislative Wrap Up

*All webinars are from noon – 1:30 Eastern Time unless otherwise noted.*

1000 Friends has applied for credits for planners (AICP CM), Florida attorneys (CLE), Florida landscape architects (DBPR), Florida Certified Floodplain Managers (CLE), and Florida Certified Environmental Health Professionals (CEHP), but cannot guarantee that credits will be approved.

Register at: [www.1000friendsofflorida.org/webinar/](http://www.1000friendsofflorida.org/webinar/)



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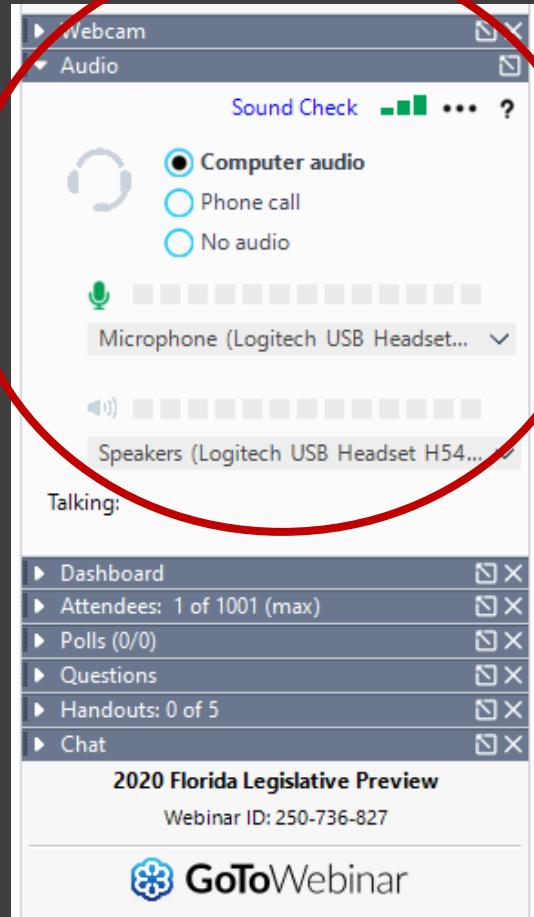
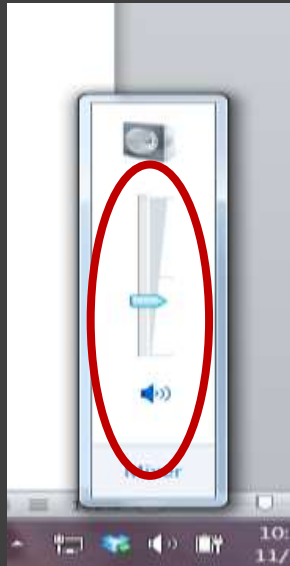
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The PowerPoint is available under “What’s New” at  
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**M-CORES Update**

1000 Friends strongly opposed the 2019 Legislation to create three toll roads through some of Florida's most pristine lands.

[Find out the latest here](#)



**2018-2019 Annual Report**

Check out 1000 Friends of Florida's annual report for the period from January 1, 2018 to June 30, 2019 for major highlights and donors.

[Find out the latest here](#)

**What's New?**

**1000 Friends Files Citizen Rights Legal Challenge**

M-CORES Webinar Broadcast Available Here

St. Johns County 2070 Events on Nov. 20 & 21

2020 Legislative Priorities


Upcoming Webinars

**Upcoming Events**

▶ Webcam	✕
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▶ Dashboard	✕
▶ Attendees: 1 of 1001 (max)	✕
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▶ Questions	✕
▶ Handouts: 0 of 5	✕
▶ Chat	✕

**2020 Florida Legislative Preview**


Webinar ID: 250-736-827

 **GoToWebinar**








Check out our 2020 Florida Legislative Update page at  
[www.1000fof.org/legis/legis-2020/](http://www.1000fof.org/legis/legis-2020/)



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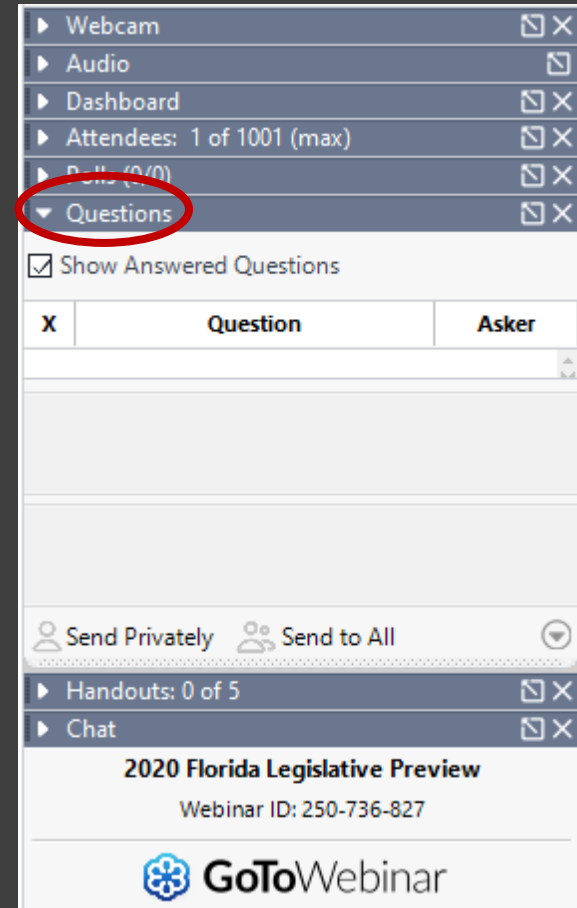
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- Please click on “+” sign and type any questions in this box
- Please refer to the slide number and/or speaker when you post your question
- Please keep your questions succinct!
- Staff will ask the presenters questions, as time permits



# Presenters



# Rowan Schmidt

## Program Director for Earth Economics

Part of the Earth Economics team since 2010, serving as a strategic leader and managing projects and partner relationships.

Leads Earth Economics' efforts to advance policy and expand funding mechanisms for investments in green infrastructure.

Core focus areas include developing policy and case studies that leverage federal funding for implementing nature-based solutions that mitigate hazards such as flood, fire, drought, and heat, and identifying ways that national accounting standards can better incorporate the value of natural assets in capital budgets.

Passionate about identifying funding mechanisms and policy levers that drive investment toward cost-effective and equitable projects that benefit communities.





# Laura Geselbracht

## Senior Marine Scientist with The Nature Conservancy in Florida

Advancing coastal resilience in Florida, the Gulf of Mexico and along the U.S. South Atlantic Coast by improving knowledge about sea level rise impacts on coastal ecosystems and adjacent developed areas for coastal resilience; designing, implementing and monitoring coastal ecosystem restoration projects to improve community resilience; identifying areas of resilient coastal ecosystems; and educating local government and community leaders about climate change risks and opportunities for adaptation.

In 2015, was awarded the Sam D. Hamilton Award for Transformational Conservation Science for her contributions to the Gulf Coast Vulnerability Assessment. Led the assessment of mangrove forest risk to climate change effects.

Also supports TNC Florida's coastal habitat restoration efforts through design, implementation and review of restoration monitoring plans.



# Leveraging FEMA Funding for Nature-Based Solutions to Support Hazard Mitigation

Rowan Schmidt, Program Director, Earth Economics



# Leveraging FEMA Funding for Nature-Based Solutions to Support Hazard Mitigation

Rowan Schmidt | Earth Economics

January 29<sup>th</sup>, 2020

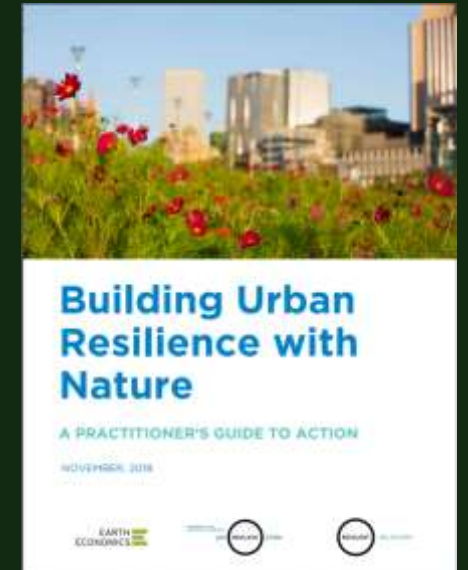
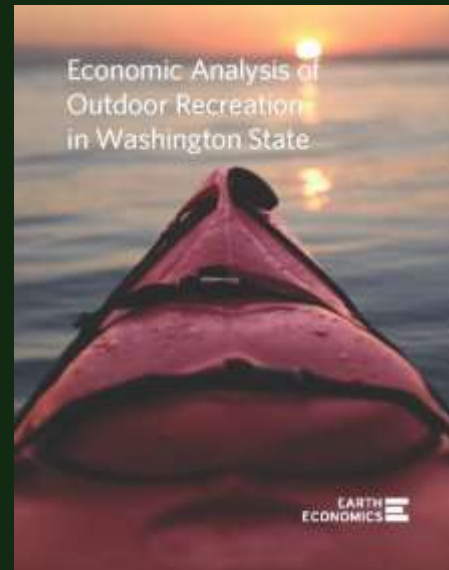
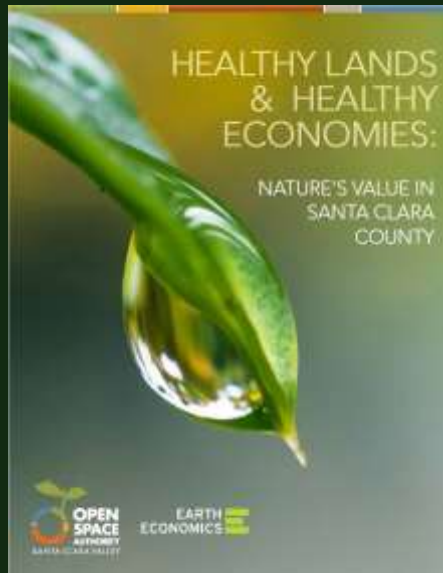


# Agenda

- The big picture
- Hazard mitigation
- Recent FEMA policy advances
- Case studies:
  - Wildfire
  - Flood
  - Drought
  - Heat Island
- How Earth Economics can help

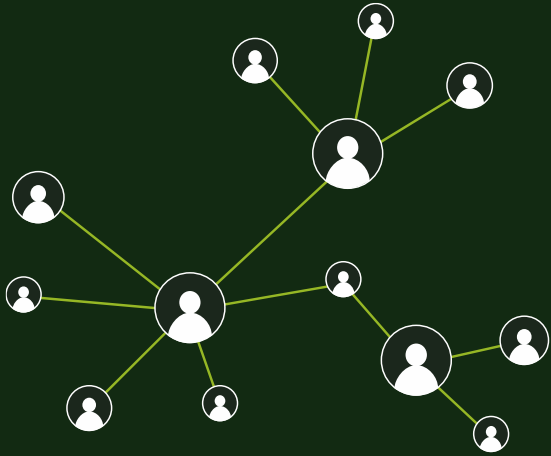


# Taking Nature into Account



# Our Approach

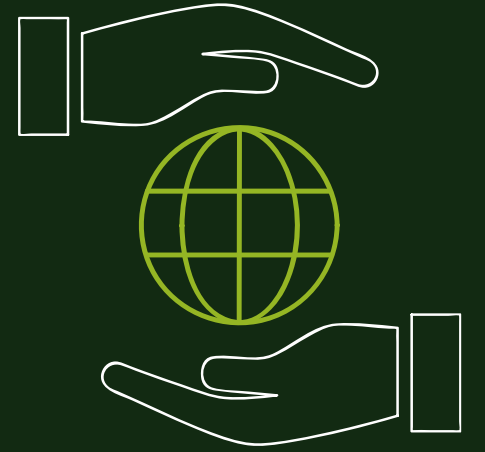
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Awareness  
Building

Place-Based  
Analysis

Policy and  
Finance





# WHAT HAS VALUE?

How do we measure it?

How do we fund it?



A photograph of a young tree with a rounded, green canopy standing in the center of a paved parking lot. The tree is planted in a small, square concrete base. In the background, there is a long, white building with a grey upper section and a series of small, barred windows. The ground is paved with dark asphalt and light-colored concrete lines marking parking spaces.

# OLD THINKING

Nature as an accessory





# NEW THINKING

Nature as the big picture











# PERMEABLE PAVEMENT

Stormwater Treatment

Water Supply

Less Severe Heat Waves

Quieter Neighborhoods

Educational Opportunities





A photograph of a rooftop garden. The foreground is filled with dense, low-growing plants, many of which have bright yellow flowers. Some plants have small white flowers. In the middle ground, a person is standing near a black metal railing, looking down at something in their hands. To the left, another person is standing near some large, white, cylindrical objects, possibly HVAC units. In the background, there are several tall city buildings under a blue sky with scattered white clouds. One building on the left is under construction, showing its concrete frame.

# GREEN ROOFS

Lower Utility Bills

Stormwater Treatment

Cooler Cities

Cleaner Air

Neighborhood Beautification



# URBAN TREES

Lower Asthma Rates  
Better Quality of Life  
Lower Temperatures  
Social Interaction  
Walkable Cities






NATURAL DISASTERS COST THE UNITED STATES A RECORD **\$306 BILLION** IN 2017.

THE PREVIOUS RECORD WAS \$215 BILLION IN 2005.

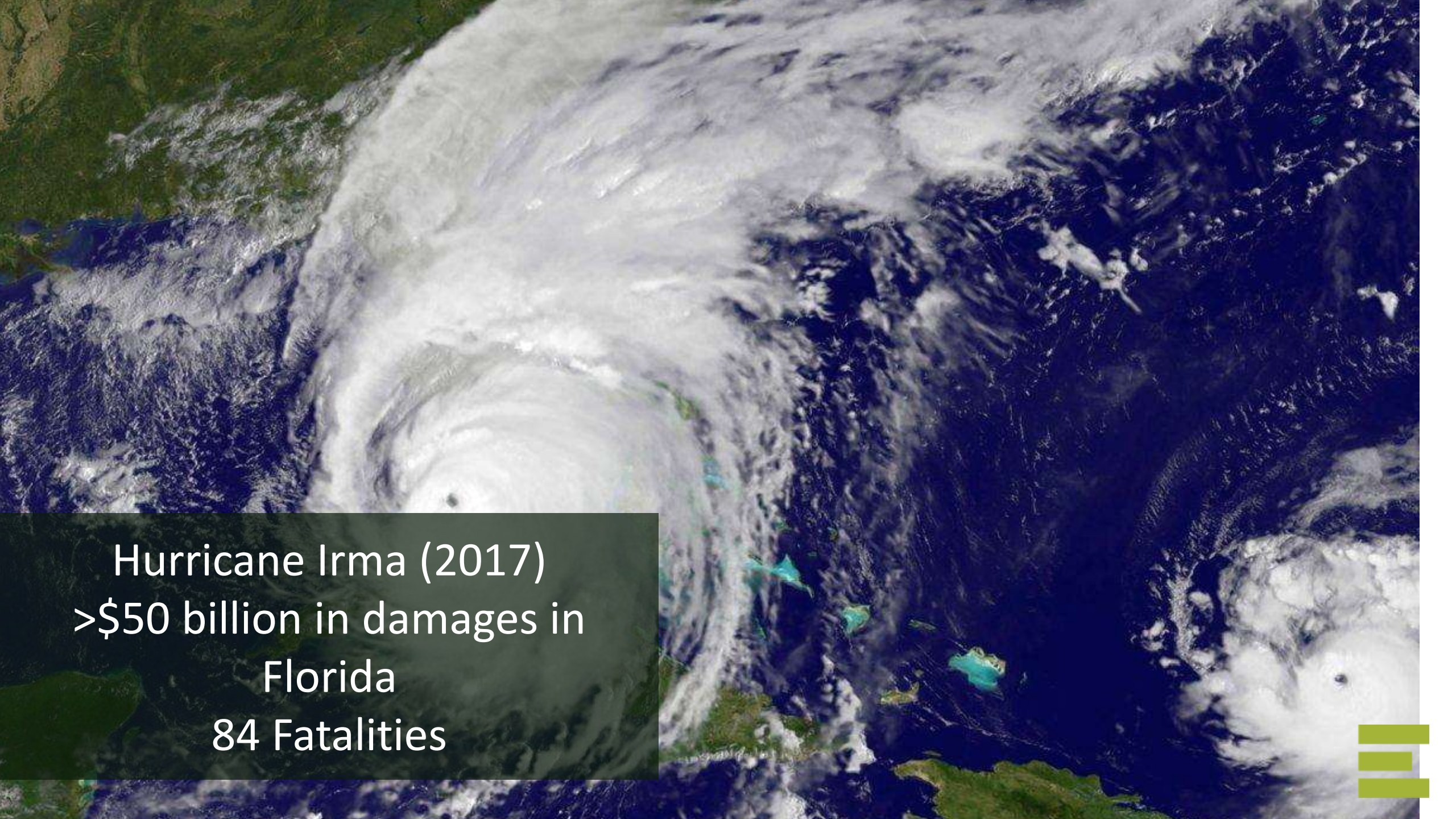


A satellite image of Hurricane Harvey, showing a well-defined eye and a dense, swirling cloud structure over the Gulf of Mexico. The surrounding ocean is dark blue, and the coastline of North America is visible on the left.

Hurricane Harvey (2017)  
\$200 billion in damages





A satellite image of Hurricane Irma, showing a large, well-defined eye and a dense, swirling cloud structure. The hurricane is positioned over the Caribbean Sea, with the outlines of the Caribbean islands visible in the lower right. The surrounding ocean is dark blue, and the landmasses are green. The hurricane's eye is a bright white circle in the center of the storm.

Hurricane Irma (2017)  
>\$50 billion in damages in  
Florida  
84 Fatalities





A satellite image of California and the surrounding Pacific Ocean. Large, billowing plumes of white and grey smoke or ash are visible rising from the land and drifting over the ocean. The land shows a mix of green vegetation and brown, arid terrain. The ocean is a deep blue with visible wave patterns.

California Wildfires (2017)  
>\$18 billion in costs





# HAZARD MITIGATION

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Any action taken to reduce or eliminate long term risk to people and property from natural disasters.



# Project Cost-Effectiveness

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Projects must be cost effective. A benefit-to-cost ratio of 1.0 or more is required.

i.e., the benefits of the project must outweigh the costs in a Benefit-Cost Analysis (BCA)



# FEMA Policy Advances

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## **2013: Environmental Benefits Policy**

- Applies to all flood acquisition

## **2016: Policy expansion, new eligible project types**

- Post-wildfire mitigation
- Aquifer storage & recovery (drought mitigation)
- Floodplain and stream restoration
- Flood diversion and storage
- Green infrastructure





# FEMA

## MITIGATION POLICY – FP-108-024-01

### I. TITLE:

Consideration of Environmental Benefits in the Evaluation of Acquisition Projects under the Hazard Mitigation Assistance (HMA) Programs

### II. DATE OF ISSUANCE:

JUN 18 2013

### III. POLICY STATEMENT:

FEMA will allow the inclusion of environmental benefits in benefit-cost analyses (BCA) to determine cost effectiveness of acquisition projects.

### IV. PURPOSE:


The purpose of this policy is to identify and quantify the types of environmental benefits that FEMA will consider in the BCA for acquisition projects.



FEMA

May 12, 2016

MEMORANDUM FOR: Mitigation Division Directors  
FEMA Regions I-X

FROM: Michael M. Grimm   
Assistant Administrator for Mitigation  
Federal Insurance and Mitigation Administration

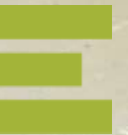
SUBJECT: Benefit Cost Analysis Tools for Drought, Ecosystem Services, and  
Post-Wildfire Mitigation for Hazard Mitigation Assistance

In September 2015, FEMA released three new activities eligible for the Hazard Mitigation Assistance (HMA) programs: Aquifer Storage and Recovery, Floodplain and Stream Restoration, and Flood Diversion and Storage, known as the Climate Resilient Mitigation Activities (CRMA). These activities can be used for any hazard when appropriate and leverage traditional risk reduction benefits and applicable ecosystem services. Additionally, FEMA developed pre-calculated benefits for cost effectiveness evaluation of soil stabilization, flood diversion, and reforestation projects in wildfire impacted areas to support expedient implementation of post-wildfire mitigation actions. With this memorandum, FEMA is releasing the following additions





# Flood Protection







Flood Protection+





# Infrastructure: A Continuum

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Natural Infrastructure

Green Infrastructure

Gray Infrastructure



# Case Studies

## Nature-Based Solutions



# FLOOD





Hurricane Harvey





A map of the Little White Oak area, showing a network of waterways (bayous) in blue and surrounding land in light gray. The map includes labels for 'Little White Oak', 'Ward Gully', 'Jankowski Ditch', and 'Jankowski Ditch'. A dark gray rectangular box is overlaid on the bottom left of the map, containing the text 'Beyond the Bayous' and 'Little White Oak'. In the bottom right corner, there are three horizontal green bars of varying lengths, stacked vertically.

# Beyond the Bayous

## Little White Oak



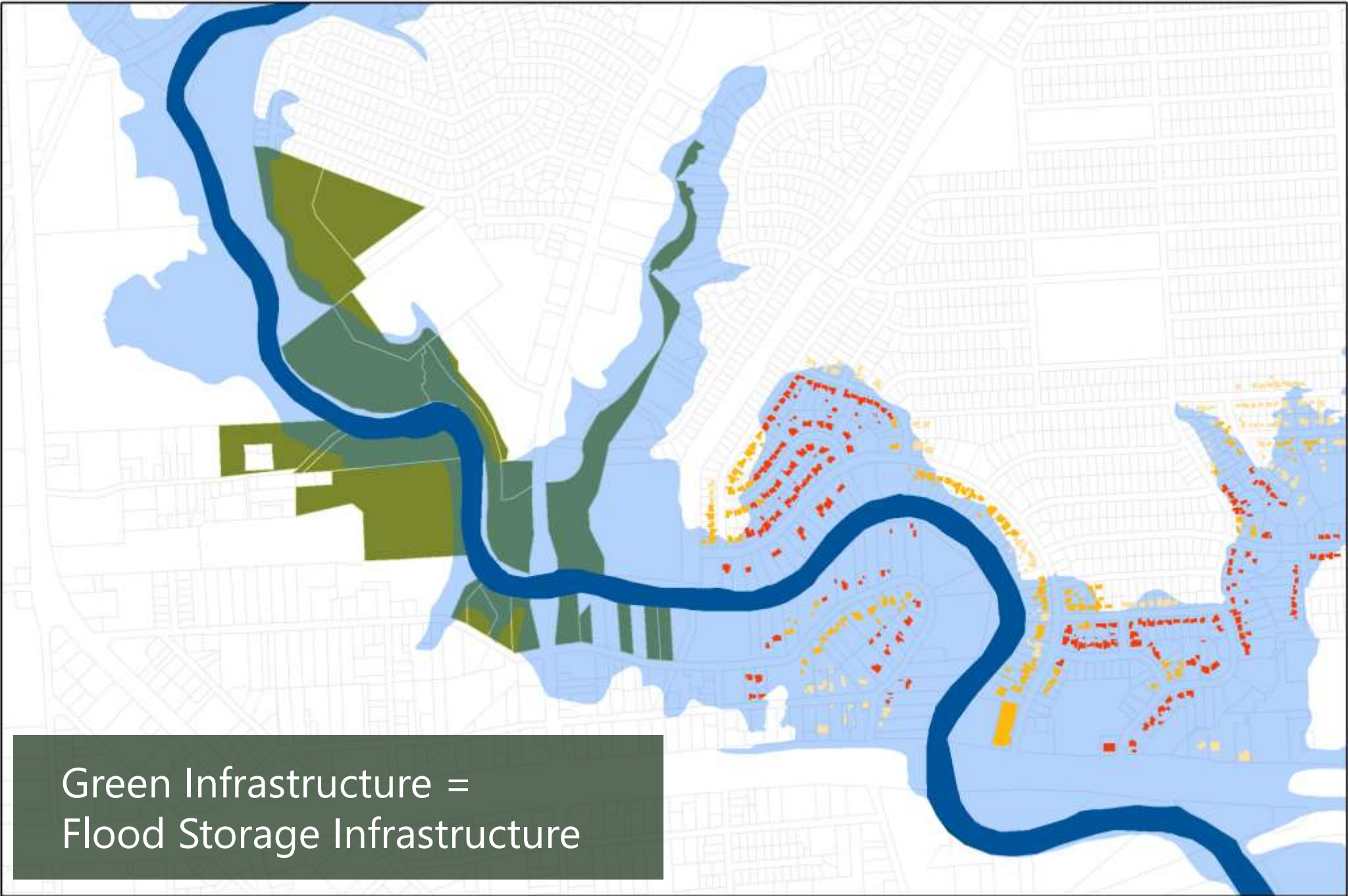
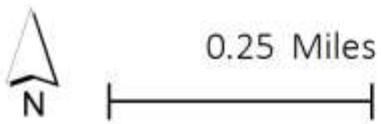


An aerial photograph of a rural landscape, showing a dirt road winding through fields and some small structures. The image is used as a background for the text.

# Traditional buyouts: Acquisitions of Parcels with Structures



# Green Infrastructure Flood Risk Reduction



# WILDFIRE





# California Wildfires



# Post-Wildfire Mitigation

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FEMA developed pre-calculated benefits to streamline implementation of mitigation actions in wildfire impacted areas to reduce risk from related hazards such as flood, drought, and slide.

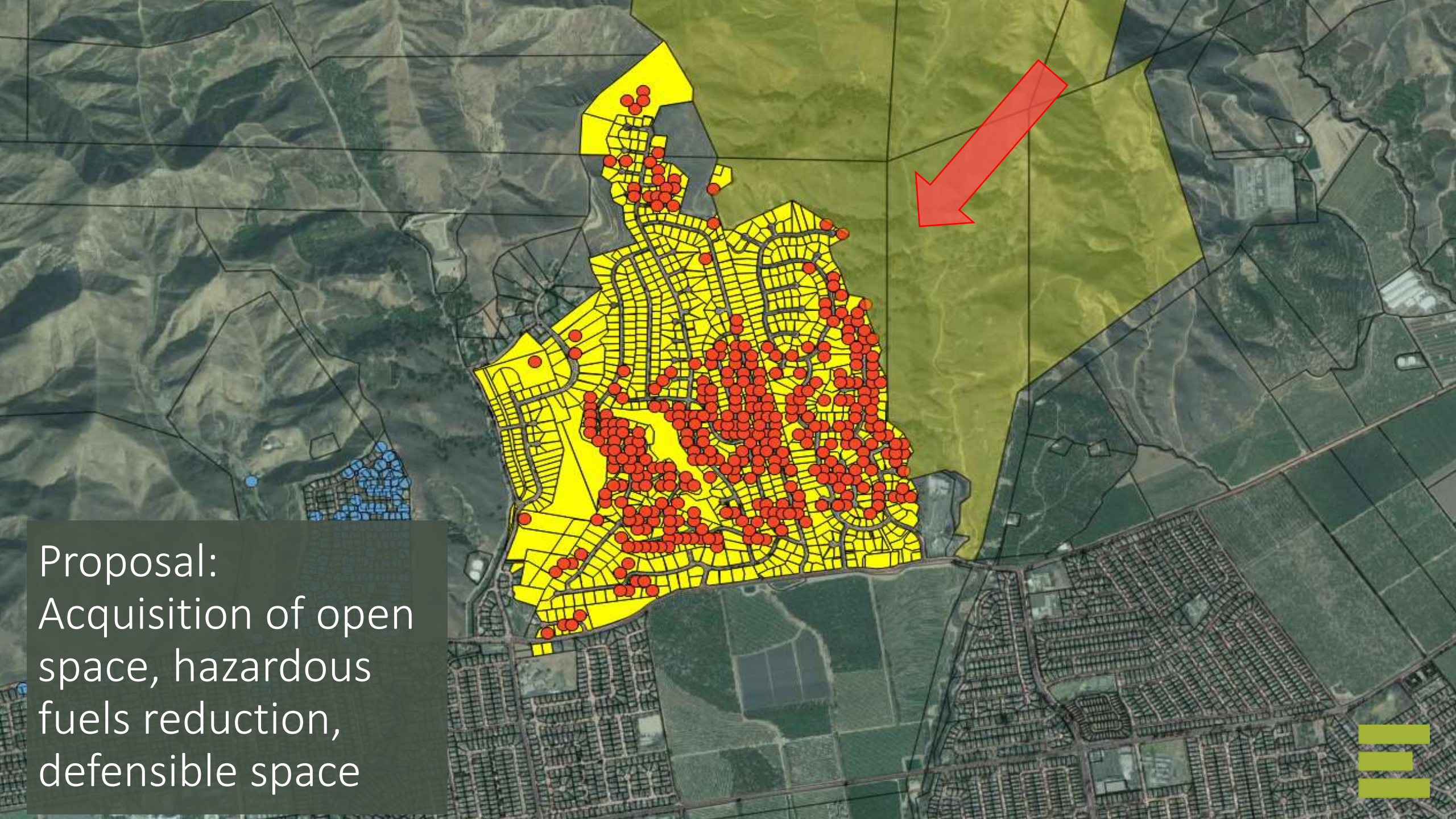
**Soil stabilization, flood diversion, and reforestation** projects under the cost of \$5,250 per acre are determined cost effective and no further BCA is required



# Wildfire Mitigation





An aerial photograph of a landscape with a yellow-shaded urban area, a green-shaded open space area, and a red arrow pointing from the green area towards the yellow area. Numerous red dots are scattered throughout the yellow area. A semi-transparent grey box with white text is in the bottom left, and three horizontal yellow bars are in the bottom right.

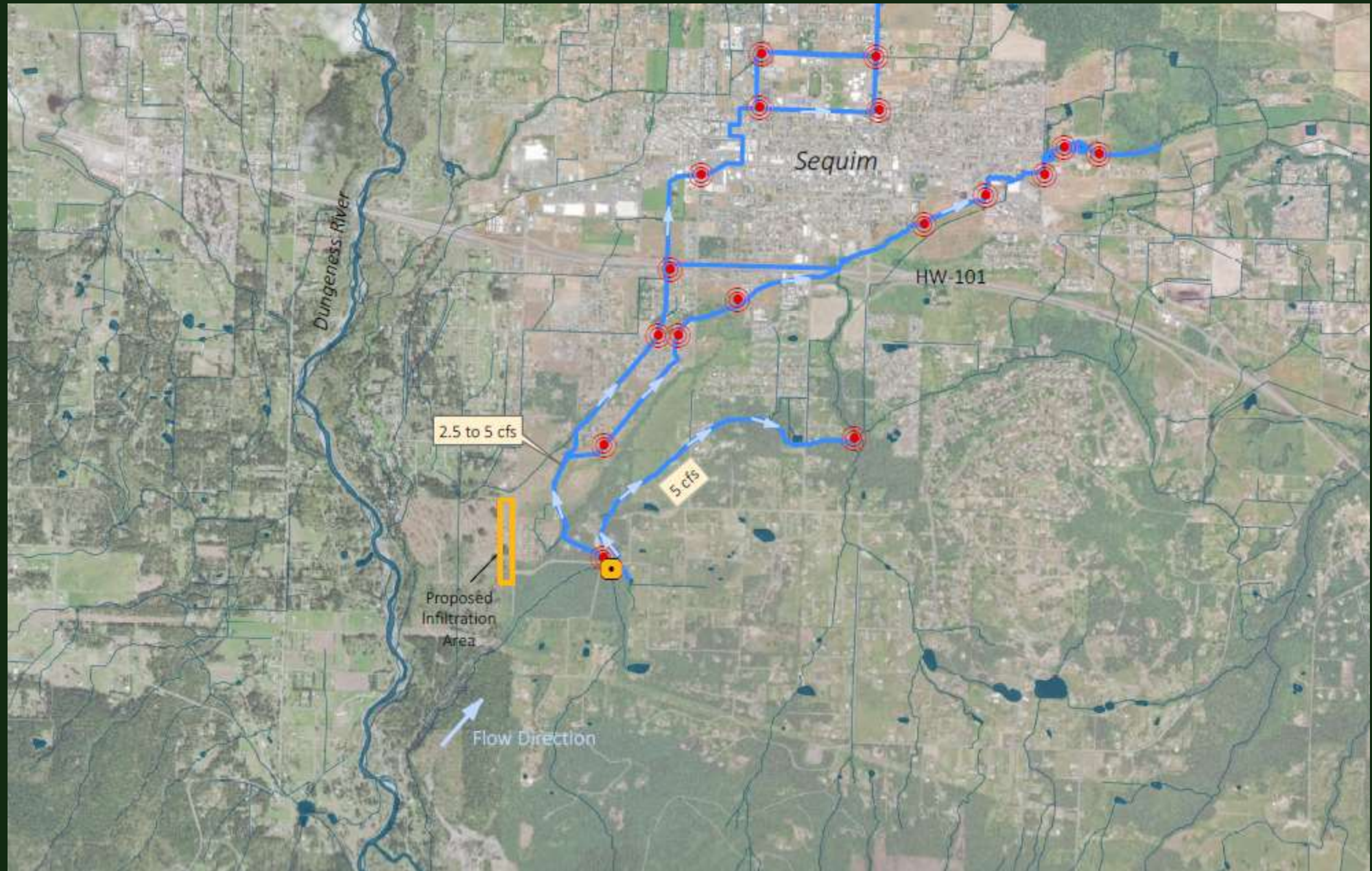
Proposal:  
Acquisition of open  
space, hazardous  
fuels reduction,  
defensible space





# DROUGHT









# URBAN HEAT ISLAND



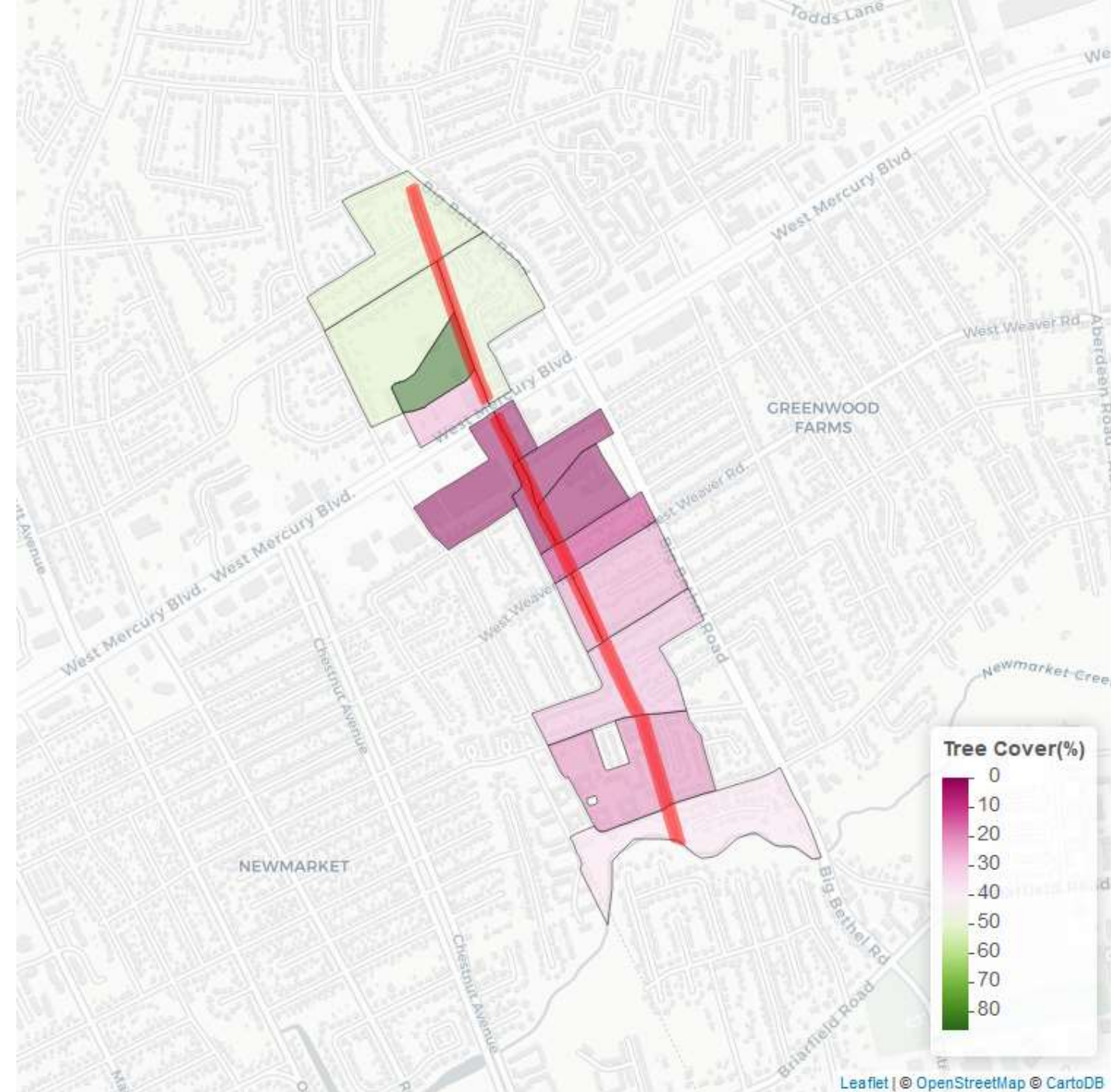






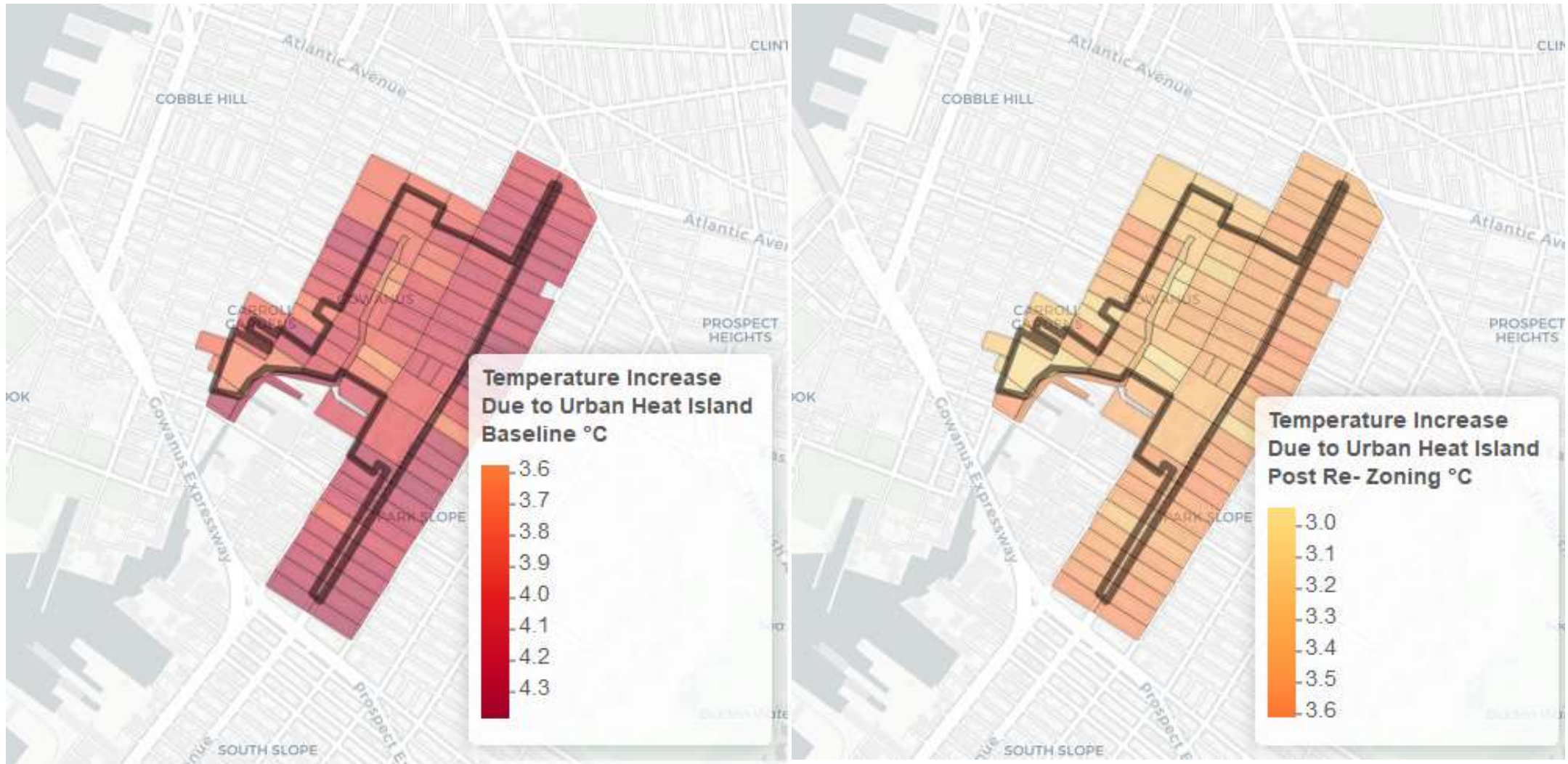
# Earth Economics' Heat Island Prototype Tool

- Estimate Urban Heat Island severity (in degrees)
- Estimate heat reduction associated with replacing impervious surfaces with tree cover and vegetation (in degrees)
- Value this reduction via reduced mortality (in dollars)



"The Urban Heat Island effect is currently causing approximately **\$24,456.99** in mortality-related damages in the Hampton area per year."





“We estimate that the proposed re-zoning will reduce the health costs of the urban heat island effect in the project area by **\$323,249 - \$631,117 annually**”

# Potential Uses

- Project level (without specific mortality attribution)
- Neighborhood level (with conservative range of mortality attribution)
- City/County level (with more precise mortality attribution)

# FEMA funding programs

- Hazard Mitigation Grant Program (HMGP)
  - Post-disaster
  - Up to 15% of total disaster assistance
    - E.g. Hurricane Harvey (2017) >\$1 billion
    - E.g. California Wildfires (2017) >\$200 million
- Pre-Disaster Mitigation Program (PDM)
  - Similar project types to HMGP
  - Annual, nationally competitive
  - ~\$250 million in FY 2018, could increase significantly in FY2020 (BRIC)
- Flood Mitigation Assistance (FMA)





# Building Resilient Infrastructure and Communities (BRIC)

- Prioritizes building resilient infrastructure and community capacity
- BRIC is expected to favor projects that have whole community partnerships and look at the bigger picture
- 6 percent set-aside of FEMA's disaster recovery programs' obligations of the previous year from the Disaster Relief Fund
- PDM funding was ~\$250 million in FY 2018, could increase significantly (~\$900m?) in FY 2020, then average ~\$300-500m per year



# Who is eligible?

- Certain Private Nonprofits (“PNPs”)
- State Agencies
- Tribes
- Local Governments





# What's the process?

1. Project scoping
2. Submit Notice of Intent to state emergency management agency (e.g. CalOES). NOI is reviewed for eligibility.
3. Submit full application to state emergency management agency
4. State agency reviews and submits to FEMA in certain order based on their criteria
5. FEMA approves funding



# How Earth Economics can help

- Support discussions with your local agencies to advance specific projects
- Support discussions with your State Hazard Mitigation Officers and FEMA Regional staff
- Support initial project scoping and eligibility questions
- Benefit-Cost Analysis for project applications
- FEMA application review



# FEMA BCA Toolkit Update

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- Excel-based platform (which means you can use on mac)
- Simpler to use
- Damage Frequency Assessment available in all modules
- Fewer manual input fields





The background of the slide is a photograph of a field of purple flowers, likely lavender, under a warm, golden sunset sky. A dark green rectangular box is centered over the image, containing the text and logo.

# Thank You

[rschmidt@eartheconomics.org](mailto:rschmidt@eartheconomics.org)

EARTH  
ECONOMICS 

# Coping with Rising Seas: The Critical Role of Nature

Laura Geselbracht, Senior Marine Scientist, The Nature Conservancy in Florida





January 2020

# Coping with Rising Seas: The Critical Role of Nature

Laura Geselbracht  
Senior Marine Science  
[lgeselbracht@tnc.org](mailto:lgeselbracht@tnc.org)

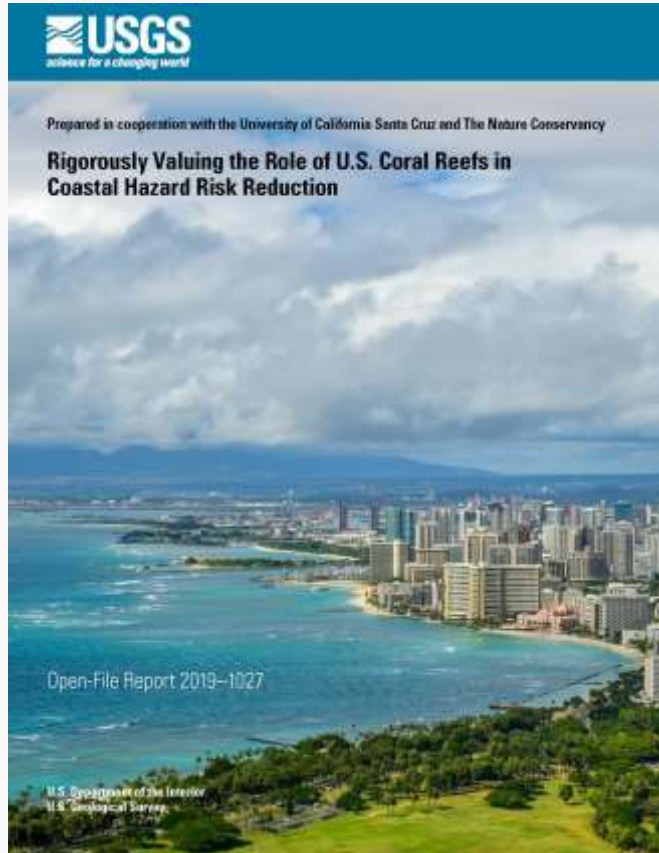






The mission of The Nature Conservancy is to conserve the lands and waters on which all life depends.

# Nature/Nature-based Solutions Protect Coastal Communities From Tropical Storms including Hurricanes, Storm Surge and Excessive Rainfall



2019 report: U.S. coral reefs provide flood protection worth \$1.8 billion annually

<https://pubs.usgs.gov/of/2019/1027/ofr20191027.pdf>

## Assessing the role of mangrove forest in reducing coastal inundation during major hurricanes

Post Andrew Modeling Analysis of South Miami-Dade County: "the removal of vegetation (mangroves and marshes) from the model leads to massive flooding with increased total inundation volume and total inundation area in the highly populated low-lying area behind the Biscayne Bay."

"...the vegetation dissipation potential of the mangrove forest is on the order of 66% which is significantly higher than the 40% estimated for marshes (Sheng et al., 2012)."

Y. Peter Sheng · Ruizhi Zou, *Hydrobiologia* (2017) 803:87–103



"...initial degradation of oyster beds following European settlement of the area coincides with a significant increase in wave-derived overwash deposition".

Simulations of Hurricane Sandy and another severe winter storm with and without oyster beds showed that "removal of these oyster beds increases wave energy directly off-shore of our field sites (in New York Harbor) by between 30% and 200%".

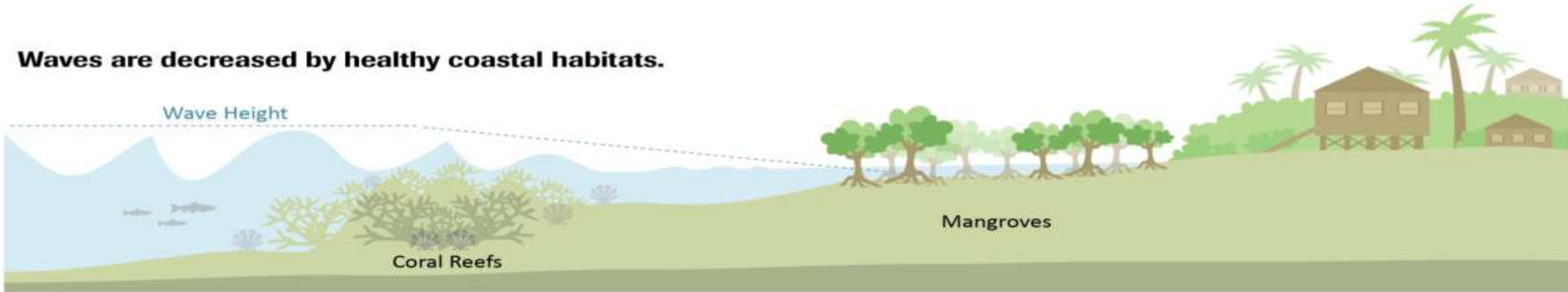


Brandon C, Woodruff J, Orton P, Donnelly JP. 2016. Evidence for Elevated Coastal Vulnerability Following Large-Scale Historical Oyster Bed Harvesting Earth Surface Processes and Landforms. *Earth Surface Processes and Landforms*. DOI: 10.1002/esp.3931

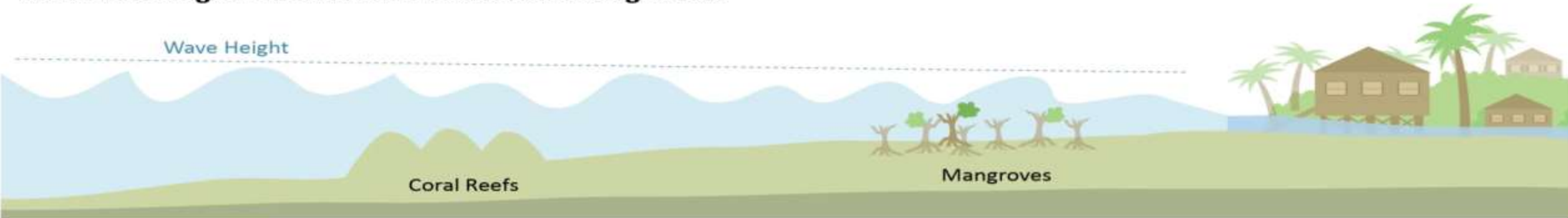


# Coastal ecosystems – coral reefs, mangroves, dunes – absorb wave energy & provide numerous co-benefits for south Floridians

**Waves are decreased by healthy coastal habitats.**



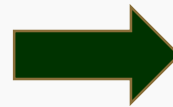
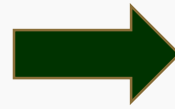
**Waves are larger when coastal habitats are degraded.**



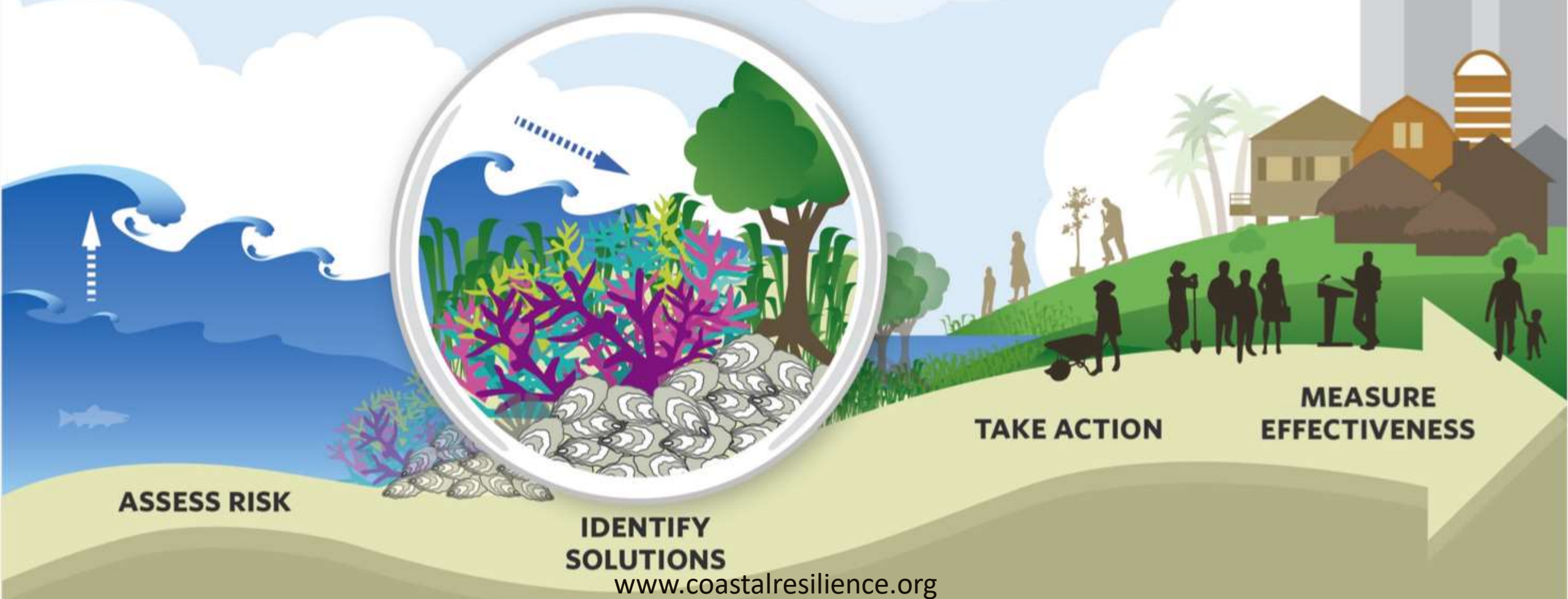
© 2014 Copyright The Nature Conservancy



# Default vs. natural infrastructure solutions



# How TNC Advances the Protection, Restoration and Application of Nature-Based Solutions to Coastal Resilience Strategies in South Florida and Beyond





# Assessing Risk: Quantifying Avoided Losses due to Coastal Ecosystems

PLoS One RESEARCH ARTICLE 2018  
Comparing the cost effectiveness of nature-based and coastal adaptation: A case study from the Gulf Coast of the United States

Borja G. Reguero, Michael W. Beck, David N. Bresch, Julianio Calil, Imen Meliane

- By 2030 flooding will cost \$134 – 176 billion due to more development in risk prone areas;
- cost-effective adaptation measures could prevent up to \$57 billion in losses (43%) over the next 20 years.
- Nature-based adaptation options could avert more than 36.6% of these costs (annualized portfolio) with an average benefit to cost ratio above 3.7.
- Wetland and oyster reef restoration were found to be particularly cost-effective.

<https://doi.org/10.1371/journal.pone.0192132>



“Without mangroves 39% more people (globally) would be flooded annually, and flood damages would increase by more than 16% and US \$82 billion annually.”

Losada, I. J., P. Menéndez, A. Espejo, S. Torres, P. Díaz-Simal, and others. 2018. Technical Report. The Nature Conservancy, Berlin.



ARTICLE

DOI: 10.1038/s41467-018-04568-z

OPEN

## The global flood protection savings provided by coral reefs

Michael W. Beck<sup>1,2</sup>, Iñigo J. Losada<sup>3</sup>, Pelayo Menéndez<sup>3</sup>, Borja G. Reguero<sup>1,2</sup>, Pedro Díaz-Simal<sup>3</sup> & Felipe Fernández<sup>3</sup>

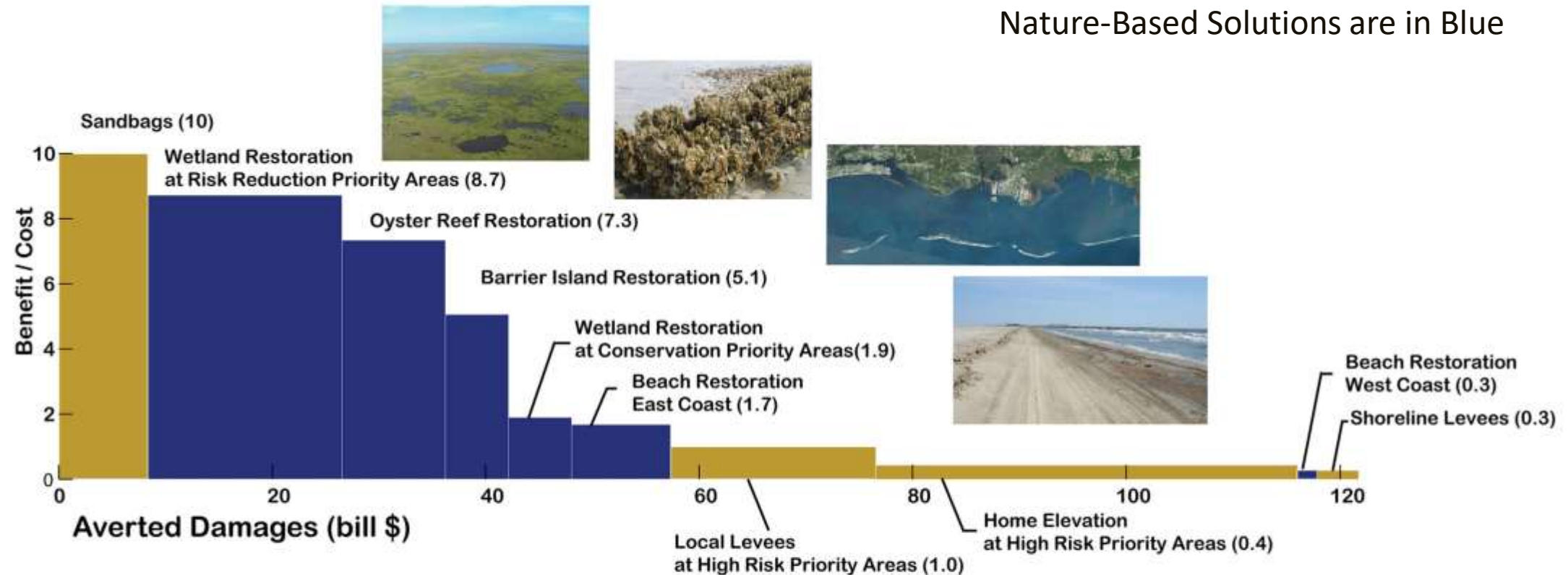
2018

“...annual expected damages from flooding would double, and costs from frequent storms would triple without reefs.

For 100-year storm events, flood damages would increase by 91% to \$US 272 billion without reefs.”



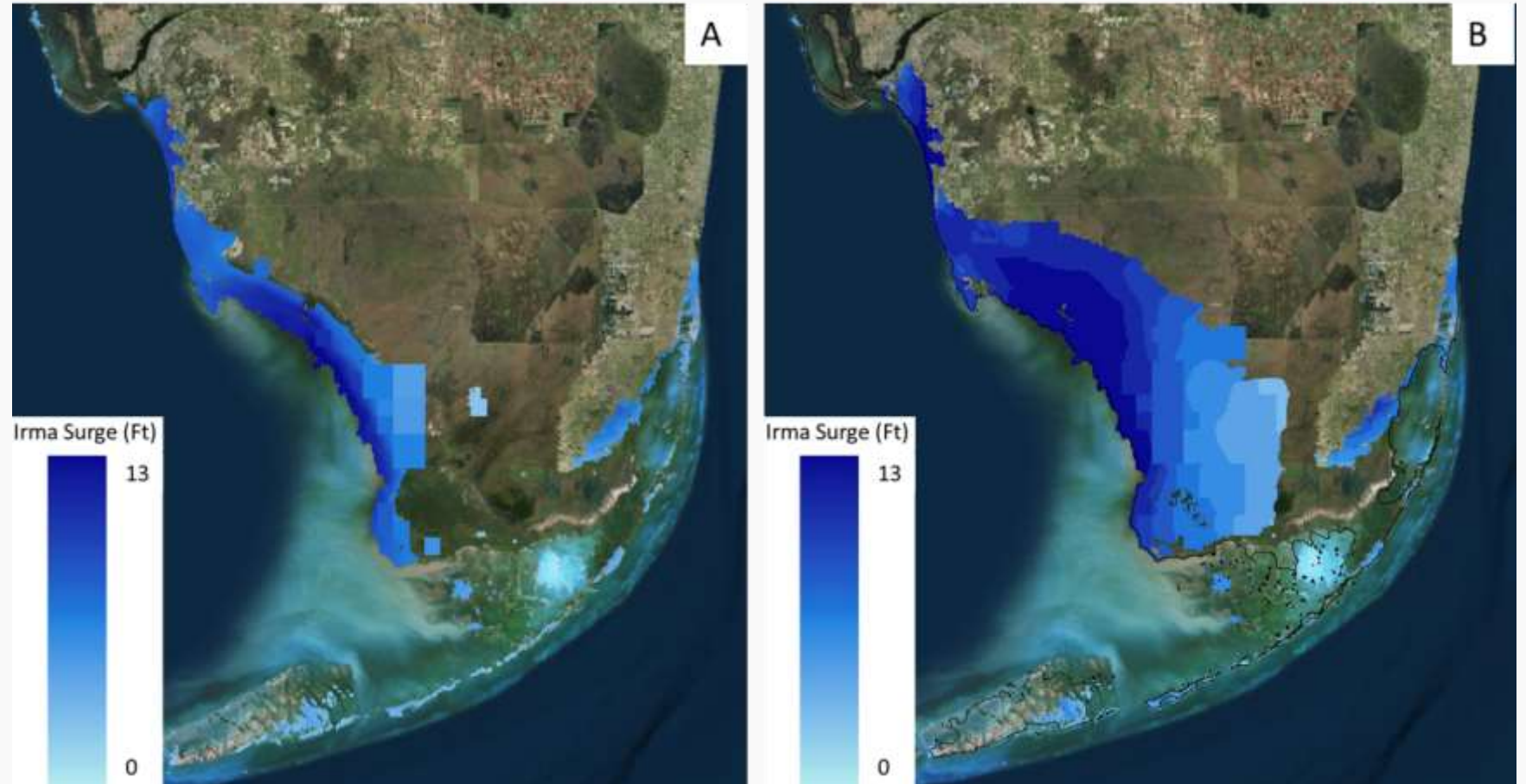
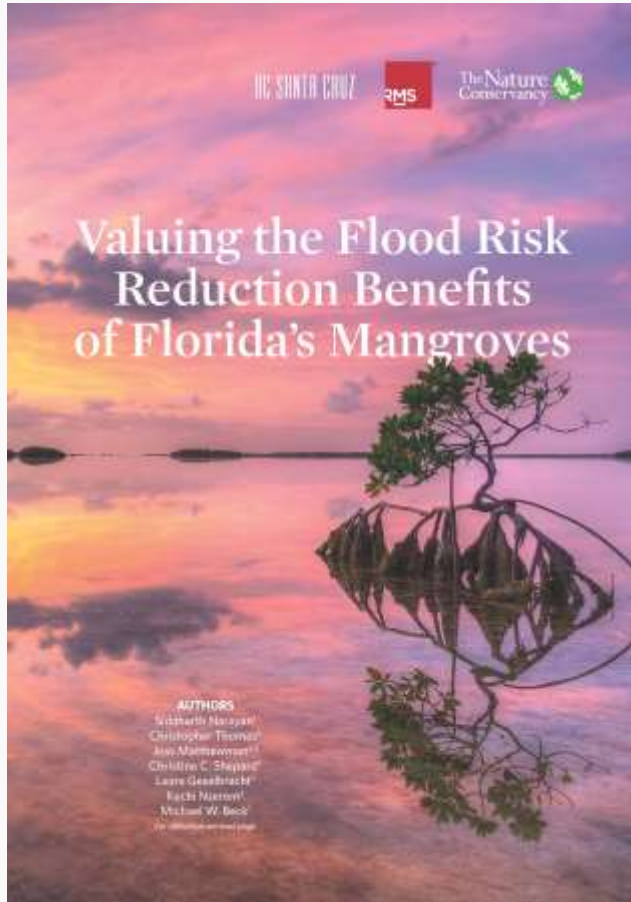
# REGUERO *ET AL.* PAPER (FROM PREVIOUS PAGE)



**Fig 6. Cost-benefit analysis.** Comparison of the costs and benefits of the adaptation measures. Benefit to cost ratios are represented in the vertical axis (height of the bars), with the horizontal axis noting the aggregated benefit (i.e. total averted damage), and the width of the bars the individual benefit from each measure. The blue bars identify nature-based adaptation measures, while the brown color represent the remaining adaptation measures. The values correspond to net present values with a 2% discount rate, for low future economic exposure growth and an implementation period of 20 years. Sources of images: flickr from U.S. Geological Survey, National Oceanic and Atmospheric Administration, U.S. Fish and Wildlife Service, and U.S. Geological Survey LandSat imagery.

<https://doi.org/10.1371/journal.pone.0192132.g006>

# Collaboration with Risk Management Solutions (RMS) Value of Mangroves for Storm Loss Reduction, Hurricane Irma

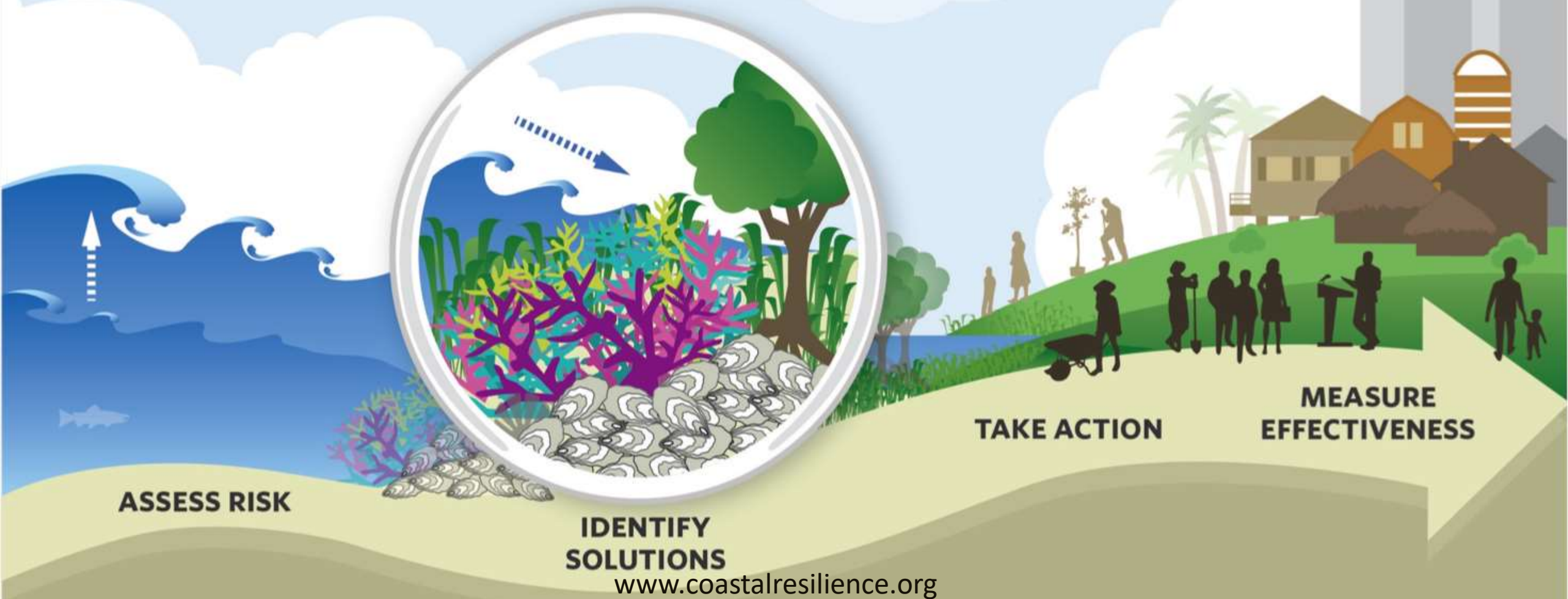


*Modelled flood extents during Hurricane Irma. A: With Mangroves, B: Without Mangroves. Base-map from ©ArcGIS Online.*

Narayan, S., C. Thomas, J. Matthewman, C. C. Shepard, A. Birch, L. Geselbracht, M. W. Beck. 2019. The Flood Risk Reduction Benefits of Florida's Mangroves During Hurricane Irma And Beyond. The Nature Conservancy, Washington, DC.



# How TNC Advances the Protection, Restoration and Application of Nature-Based Solutions to Coastal Resilience Strategies in South Florida and Beyond





# Identifying Solutions through the use of decision support tools (coastalresilience.org)

## Coastal Defense

Coastal Defense quantifies how natural habitats (oyster reefs, tidal marshes, seagrass ...) protect coastal areas by reducing wave-induced erosion and inundation. It uses standard engineering techniques to help you estimate how and where to restore or conserve critical habitat, and increase the resilience of your coastal community and infrastructure.

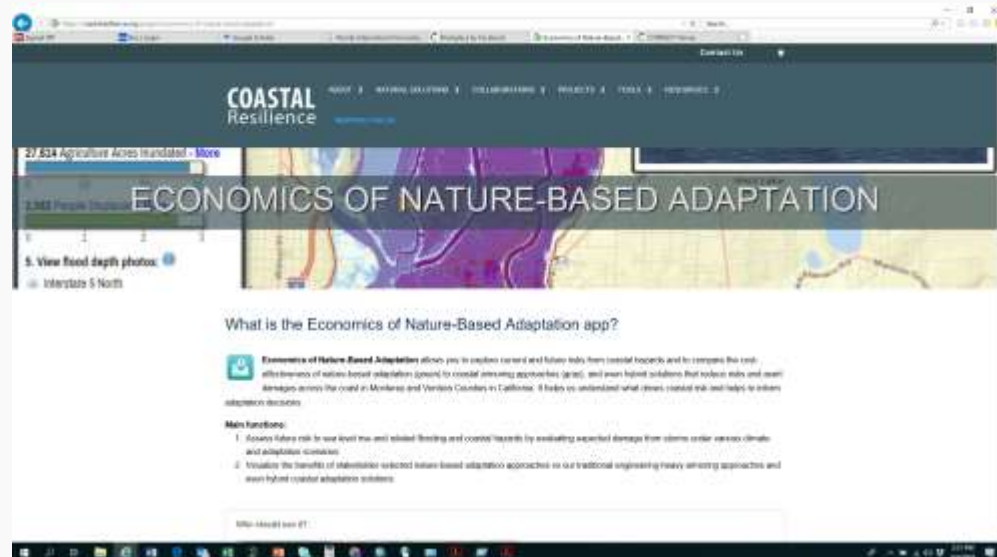
### Wave attenuation with a healthy tidal marsh.



### Wave attenuation with a degraded tidal marsh.



© 2014 Copyright The Nature Conservancy



**COASTAL Resilience**

27,534 Agriculture Acres Inundated - More

3,362 People Threatened

**ECONOMICS OF NATURE-BASED ADAPTATION**

5. View Flood depth photos. Interstate 5 North

**What is the Economics of Nature-Based Adaptation app?**

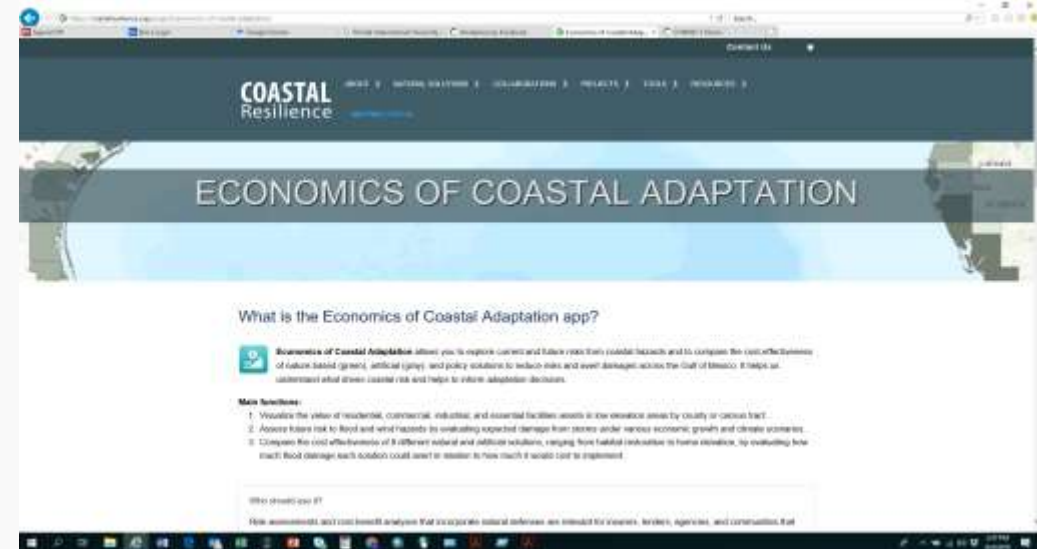
**Economics of Nature-Based Adaptation** allows you to explore current and future risks from coastal hazards and to compare the cost effectiveness of nature-based adaptation (green) to coastal armoring approaches (gray), and even hybrid solutions that reduce risks and avert damages across the coast in Monterey and Ventres Counties in California. It helps you understand what drives coastal risk and helps to inform adaptation decisions.

**Main functions:**

1. Assess future risk to our loved lives and related livelihoods and coastal hazards by evaluating expected damage from storms under various climate and adaptation scenarios.
2. Visualize the benefits of alternative selected nature-based adaptation approaches to our traditional engineering heavy armoring approaches and even hybrid coastal adaptation solutions.

Who should use it?

Risk assessments and cost benefit analyses that incorporate natural defenses are essential for planners, engineers, scientists, and communities that



**COASTAL Resilience**

**ECONOMICS OF COASTAL ADAPTATION**

**What is the Economics of Coastal Adaptation app?**

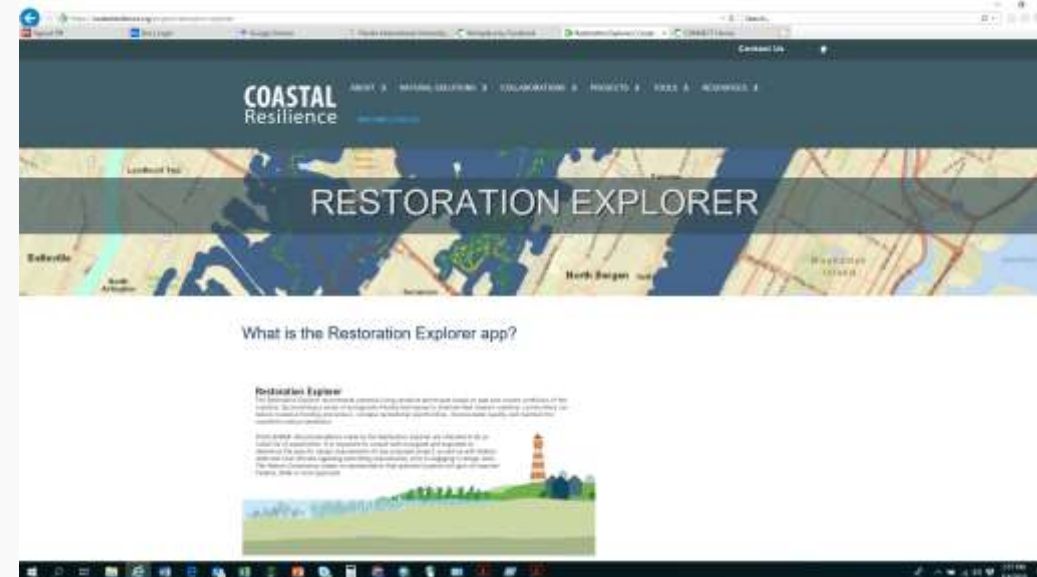
**Economics of Coastal Adaptation** allows you to explore current and future risks from coastal hazards and to compare the cost effectiveness of nature-based adaptation (green), armoring approaches (gray), and policy solutions to reduce risks and avert damages across the Gulf of Mexico. It helps you understand what drives coastal risk and helps to inform adaptation decisions.

**Main functions:**

1. Visualize the value of residential, commercial, industrial, and essential facilities assets in the coastline areas by county or census tract.
2. Assess future risk to flood and wind hazards by evaluating expected damage from storms under various economic growth and climate scenarios.
3. Compare the cost effectiveness of 8 different natural and artificial solutions, ranging from habitat conservation to home elevation, by evaluating how much flood damage each solution could avert to estimate how much it would cost to implement.

Who should use it?

Risk assessments and cost benefit analyses that incorporate natural defenses are essential for planners, engineers, scientists, and communities that



**COASTAL Resilience**

**RESTORATION EXPLORER**

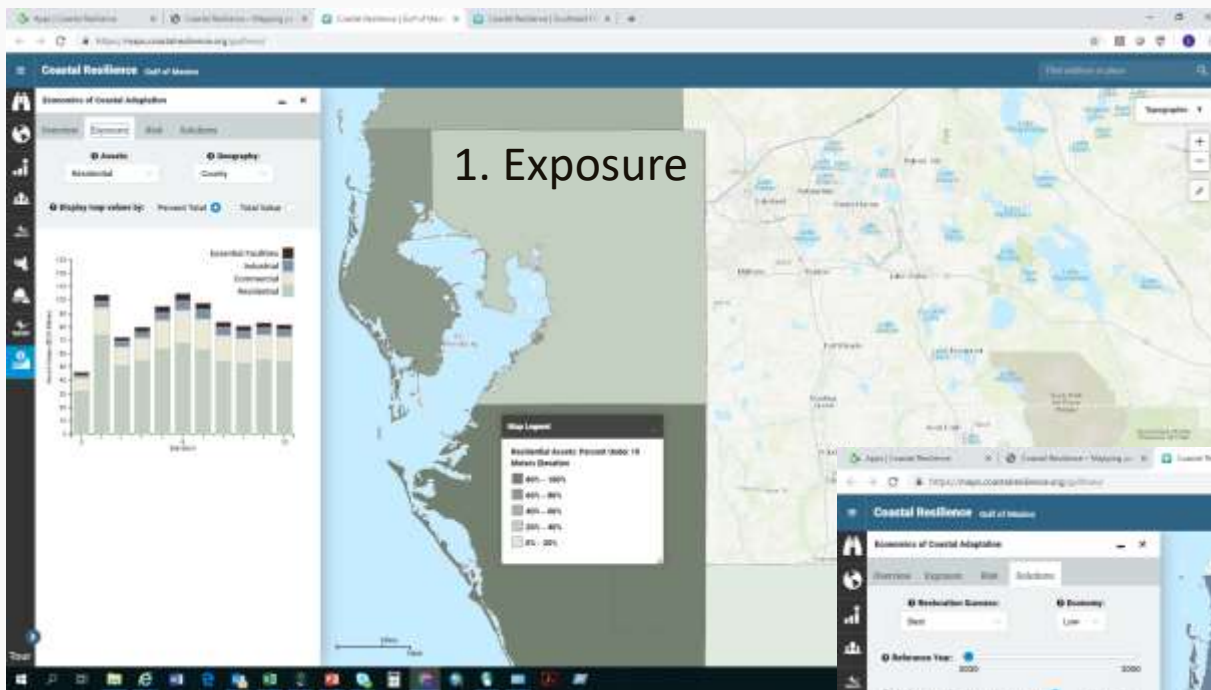
**What is the Restoration Explorer app?**

**Restoration Explorer**

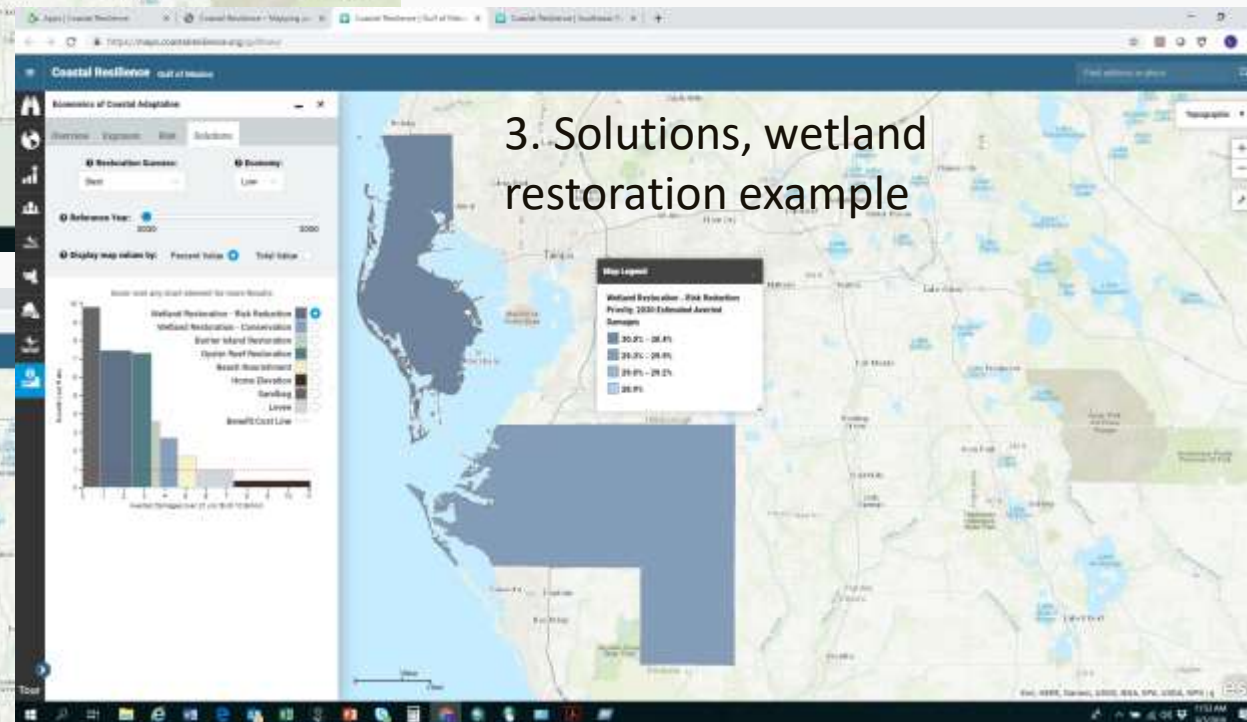
The Restoration Explorer app provides a map of the Monterey Peninsula and a description of the app's main functions.

# Economics of Coastal Adaptation App (CoastalResilience.org)

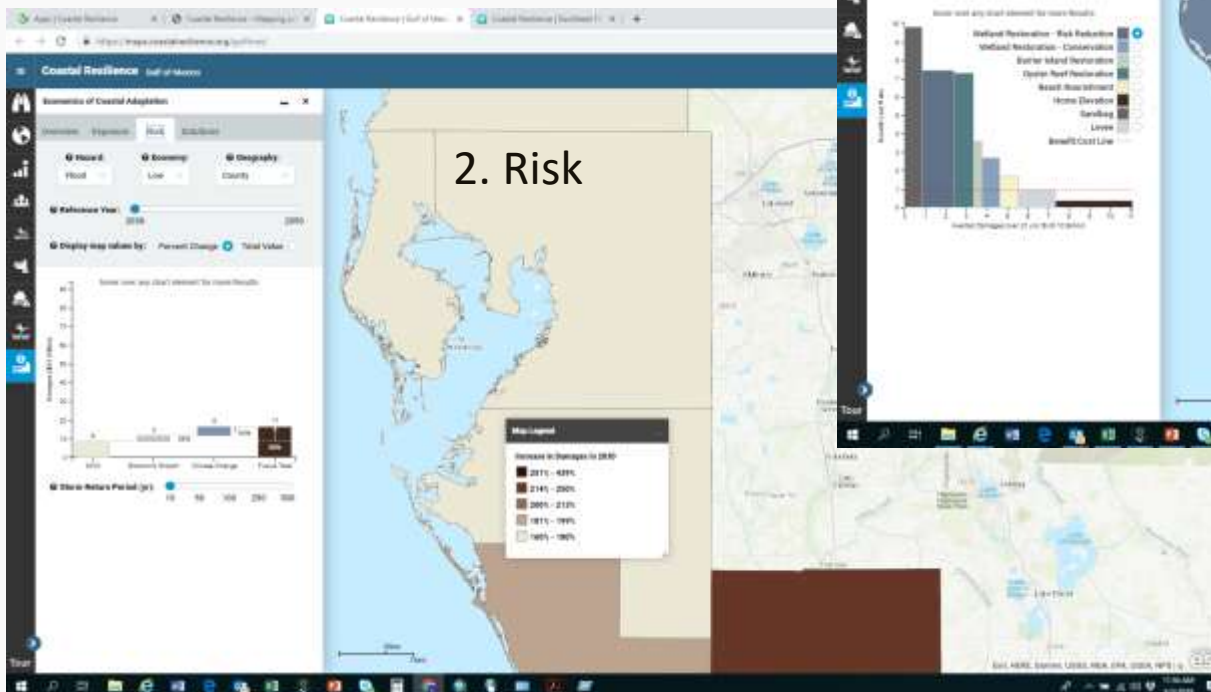
## 1. Exposure



## 3. Solutions, wetland restoration example



## 2. Risk



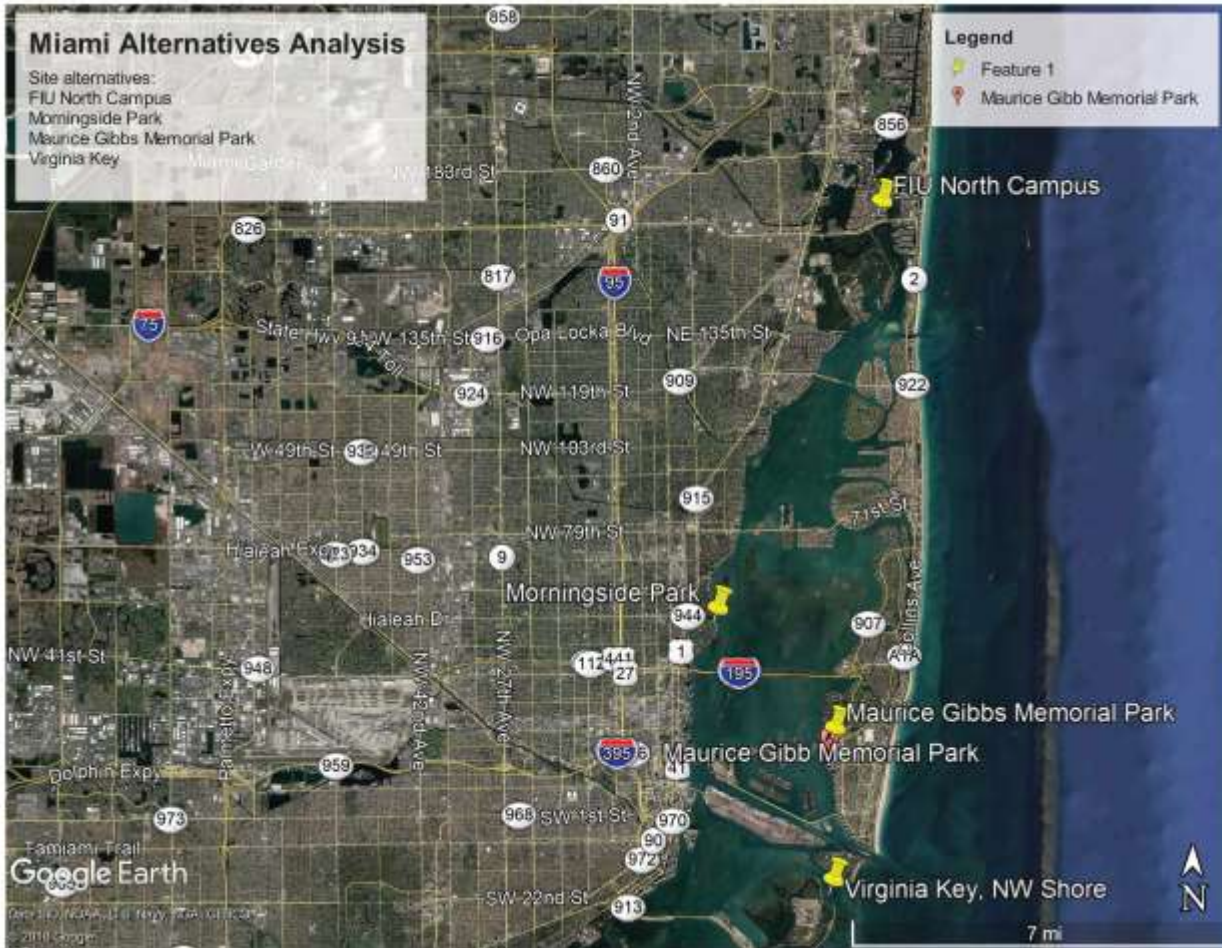
Based on analyses done in the Reguero *et al.* 2018 paper



# Take Action: Local Projects to Reduce Flooding Risks and Losses

## Collaboration with Chubb

### Miami Demonstration Project



Considering cost-effective solutions using mangrove stands, oyster reef, raised berms and offshore islands, breakwaters



# Recap: Reducing Losses Will Require



- Minimizing exposure of coastal infrastructure
- Preserving existing coastal ecosystems
- Restoring coastal ecosystems
- Utilizing nature-based solutions combined with grey infrastructure where warranted.





# Take Action: Innovative Funding Solutions to Increase Coastal Resilience – Coral Reefs

- Coral reefs, first line of defense protecting coastal populations from storms
- In Florida, \$675 m in annual avoided losses
- Corals increasingly vulnerable to bleaching and disease.
- Loss of 1 m of reef could double the cost of storm damage

## In Mexico:

- TNC partnered with government of Quintana Roo, Swiss Re, tourism industry and local community in Cancun area
- Mexico Solution: A Fee paid by beachfront property owners to a trust fund will pay for ongoing reef management and for an insurance policy to repair the reef after large-scale storm damage



In US: We are currently examining if a similar approach could work in Florida and Hawaii. If feasible, we will work with partners to establish an insurance policy by 2022.



# Thank You!

For more information contact Laura Geselbracht at [lgeselbracht@tnc.org](mailto:lgeselbracht@tnc.org)

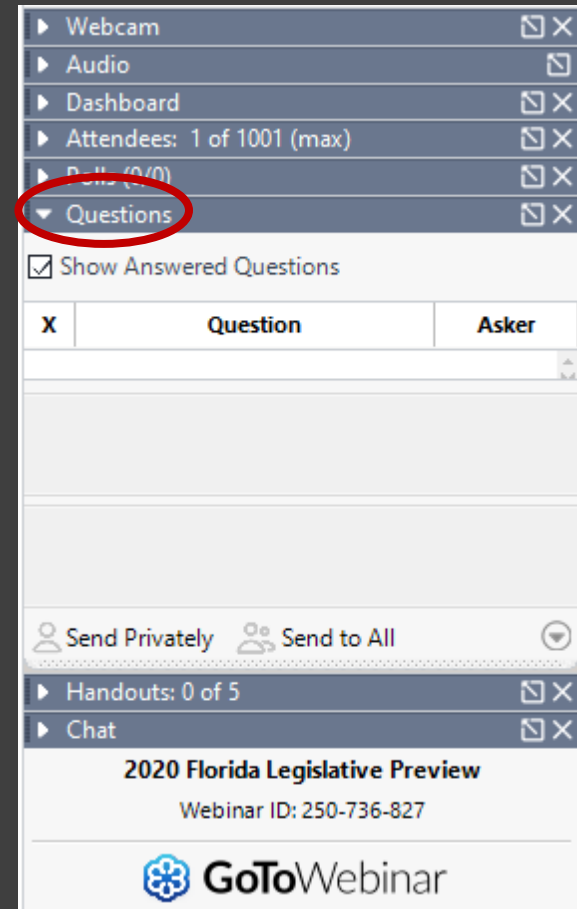




# Questions and answers


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- Please keep your questions succinct!
- Staff will ask the presenters questions, as time permits








The PowerPoint is available under “What’s New” at  
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Find out the latest here



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Check out 1000 Friends of Florida's annual report for the period from January 1, 2018 to June 30, 2019 for major highlights and donors.

Find out the latest here

**What's New?**

**1000 Friends Files Citizen Rights Legal Challenge**

M-CORES Webinar Broadcast Available Here

St. Johns County 2070 Events on Nov. 20 & 21

2020 Legislative Priorities


Upcoming Webinars

**Upcoming Events**

▶ Webcam	✕
▶ Audio	✕
▶ Dashboard	✕
▶ Attendees: 1 of 1001 (max)	✕
▶ Polls (0/0)	✕
▶ Questions	✕
▶ Handouts: 0 of 5	✕
▶ Chat	✕

**2020 Florida Legislative Preview**

Webinar ID: 250-736-827

 **GoToWebinar**



# This webinar has been approved for:

*Planners (1.5 AICP CM #9192437)*

*Florida attorneys (2 CLE #1909795N)*

*Florida Certified Environmental Health Professionals (.10 CEUs)*

*Florida Certified Floodplain Managers (1 CEC)*

*In the follow up email for the LIVE WEBINAR you will receive:*

A link to a **brief survey** to help us improve future webinars

A certificate of attendance





# For Landscape Architects:

1000 Friends has not yet received certification information from the DBPR. We will post an update at <https://1000fof.org/upcoming-webinars/credits/>

If credits are approved, 1000 Friends only provides certificates of attendance for those who attend the live webinar

1. In the follow up email sent an hour after the live webinar you will receive a certificate of attendance
2. Use Google Chrome to download the certificate
3. Add the course number, provider number and your number to the certificate
4. Submit the certificate yourself to DBPR

*Florida landscape architects (1000 Friends' provider # PVD151)*



# Dr. John M. DeGrove Webinar Series

- February 19 – 2020 Florida Legislative Update
- March 11 – The Economics of Development in Florida
- April 15 – 2020 Florida Legislative Wrap Up

*All webinars are from noon – 1:30 Eastern Time unless otherwise noted.*

1000 Friends has applied for credits for planners (AICP CM), Florida attorneys (CLE), Florida landscape architects (DBPR), Florida Certified Floodplain Managers (CLE), and Florida Certified Environmental Health Professionals (CEHP), but cannot guarantee that credits will be approved.

Register at: [www.1000fof.org/webinars](http://www.1000fof.org/webinars)





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