

A white and blue ferry boat is moving across a body of water, leaving a white wake. The sky is clear and blue. In the background, there is a line of green trees and a small building. The text is overlaid on a dark blue rectangular background on the right side of the image.

# Build-out Analysis of Bald Head Island:

Scenario Analysis of the Impacts  
of Future Development and  
Zoning on Bald Head Island's  
Maritime Forest

“Blessed are those who  
plant trees under whose  
shade they will never sit.”

Hyacinthe Loyson  
(French Theologian, 1866)



Photo Credit: Jess Abel

“Blessed are those who  
~~plant~~ trees under whose  
shade they will never sit.”

Hyacinthe Loyson  
(French Theologian, 1866)



“Blessed are those who  
**preserve** trees under whose  
shade they will never sit.”

Hyacinthe Loyson  
(French Theologian, 1866)



# Why is the maritime forest important?

- Acts as a buffer to protect the island from wind erosion during tropical storms.
- Provides habitat for wildlife
- Helps regulate the impacts of extreme heat
- Increases property value

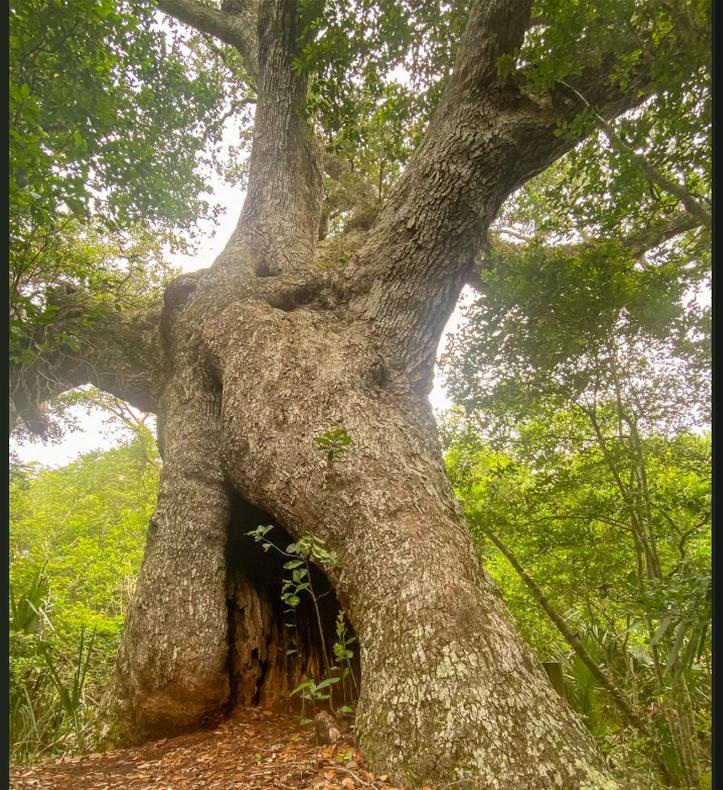
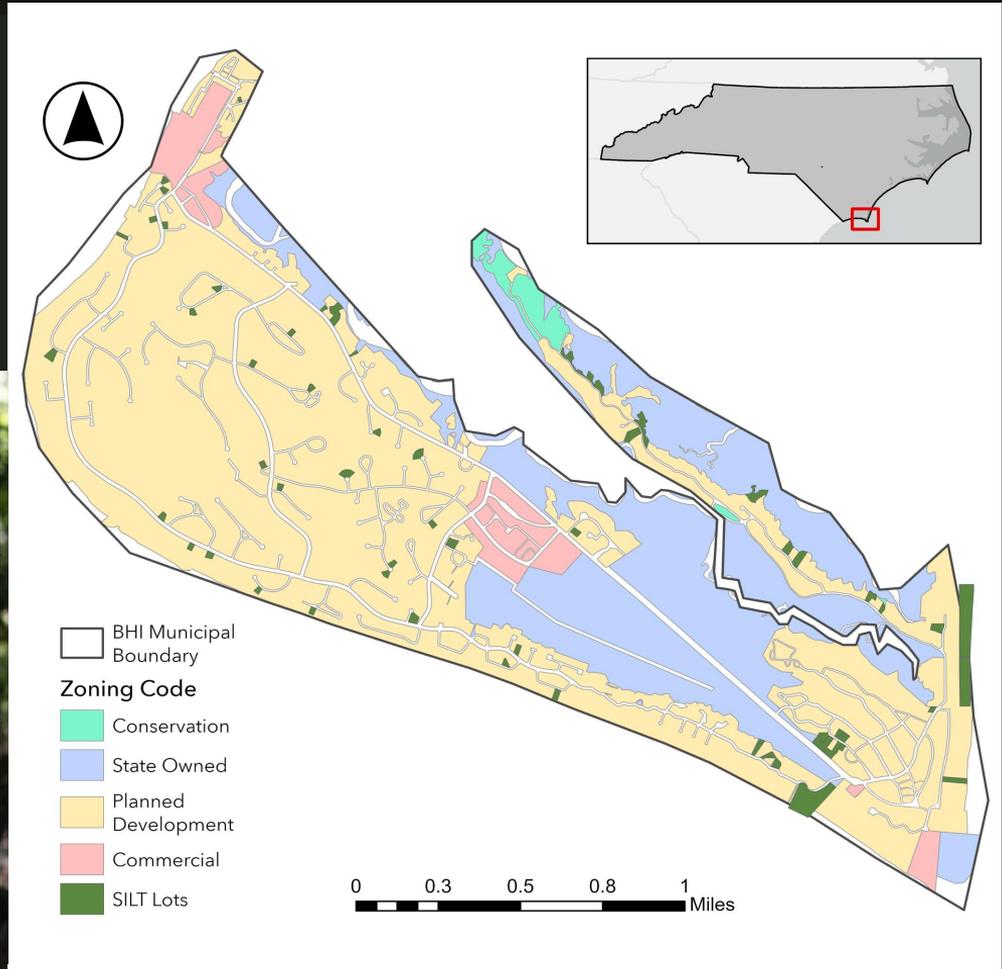


Photo Credit: Jess Abel

# Project Overview

What will happen to the Maritime forest when all lots that are zoned for development are built on?



# Mixed Methods



## Quantitative

Geospatial Analysis of  
aerial footage to  
calculate the impacts  
of development to the  
maritime forest



## Qualitative

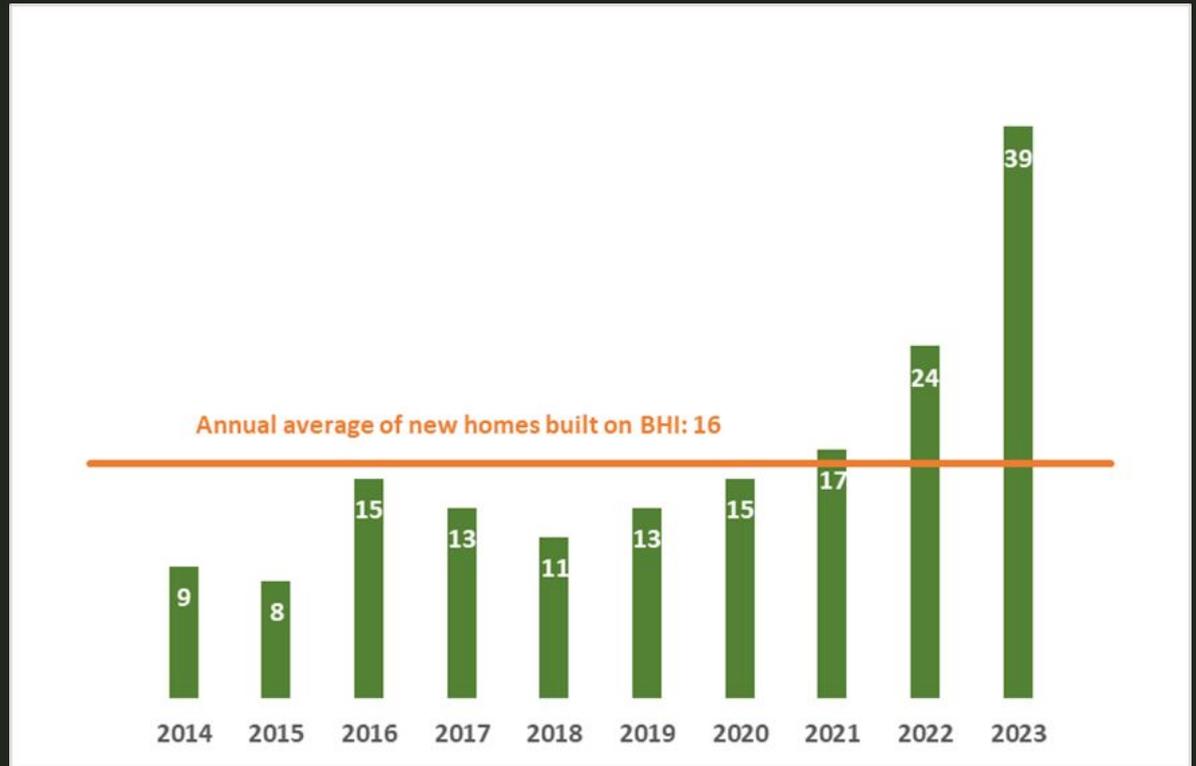
BHI Stakeholder Interviews to  
better understand the current  
BHA Landscape Design  
Guidelines

# Current Development

Based on the past 10 years, BHI has **16** new single family homes built each year.

As of this year there are only **802** undeveloped lots remaining on the Island.

If this average remains, BHI could be fully built out in the next **50 years** (2074)



Source: Village of BHI Certificates of Occupancy

Bald Head  
Island is  
currently over  
60% built out

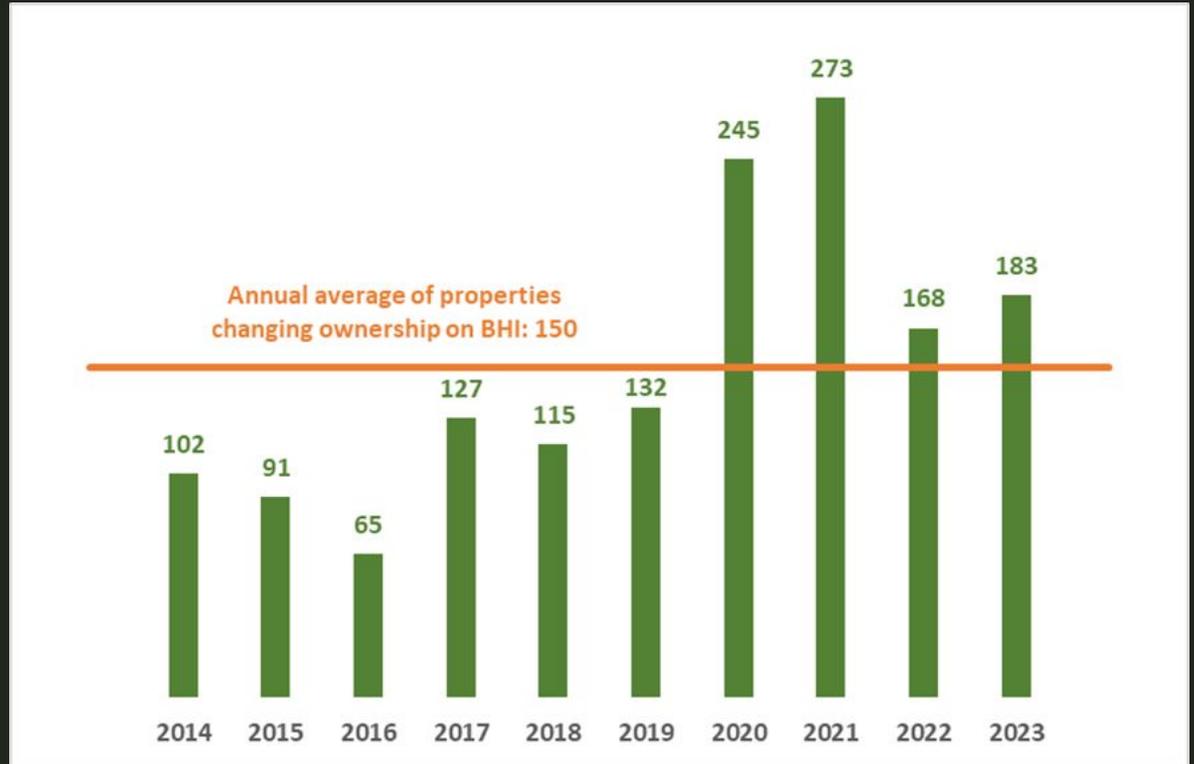


# Current Development

Based on the past 10 years, BHI has an average of **150** properties changing ownership each year.

BHI has a total of **2,114** lots

This means that **7%** of all BHI properties change ownership every year.



Source: Bald Head Association

# Land Cover Data

Source: 2023  
Orthoimagery data  
from NC One Map



# BHI Land Cover



**32%**  
Tree Canopy



**20%**  
Non-Canopy  
Vegetation



**17%**  
Impervious  
Surface

As of 2023, over **50%** of land cover within Bald Head Island municipal boundary contains **vegetation**.



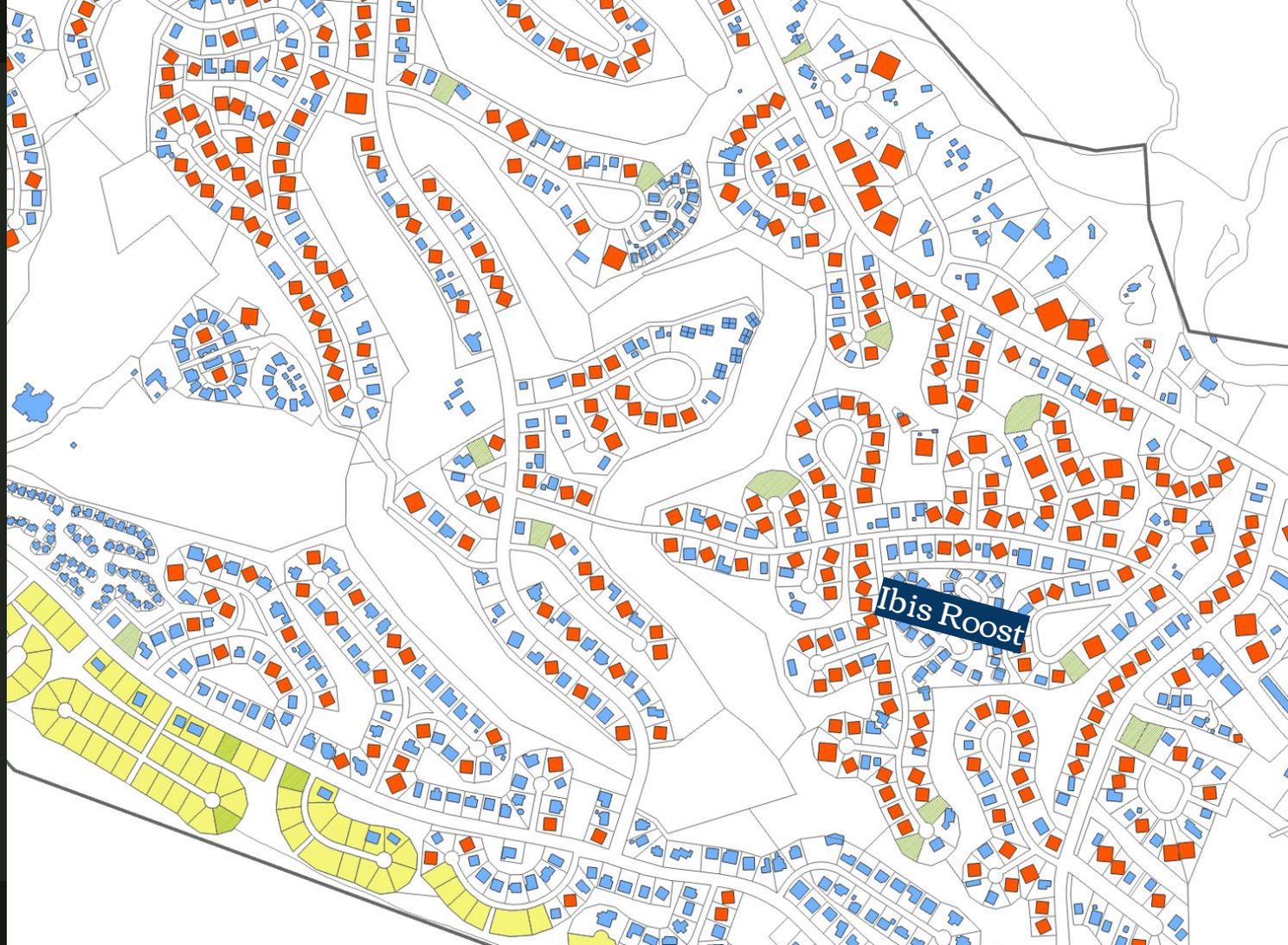
# Impervious Surface Design Guideline

- “In any environment, the impervious drainage surface coverage is limited to a maximum of 25% of the total square footage of the lot. This is the area of the property covered by structures or materials that do not allow water to penetrate or percolate into the ground.” (pg. 59)
- “In any environment, the ARC building coverage shall be limited to a maximum of 25% of the total square footage of the lot.”(pg. 59)

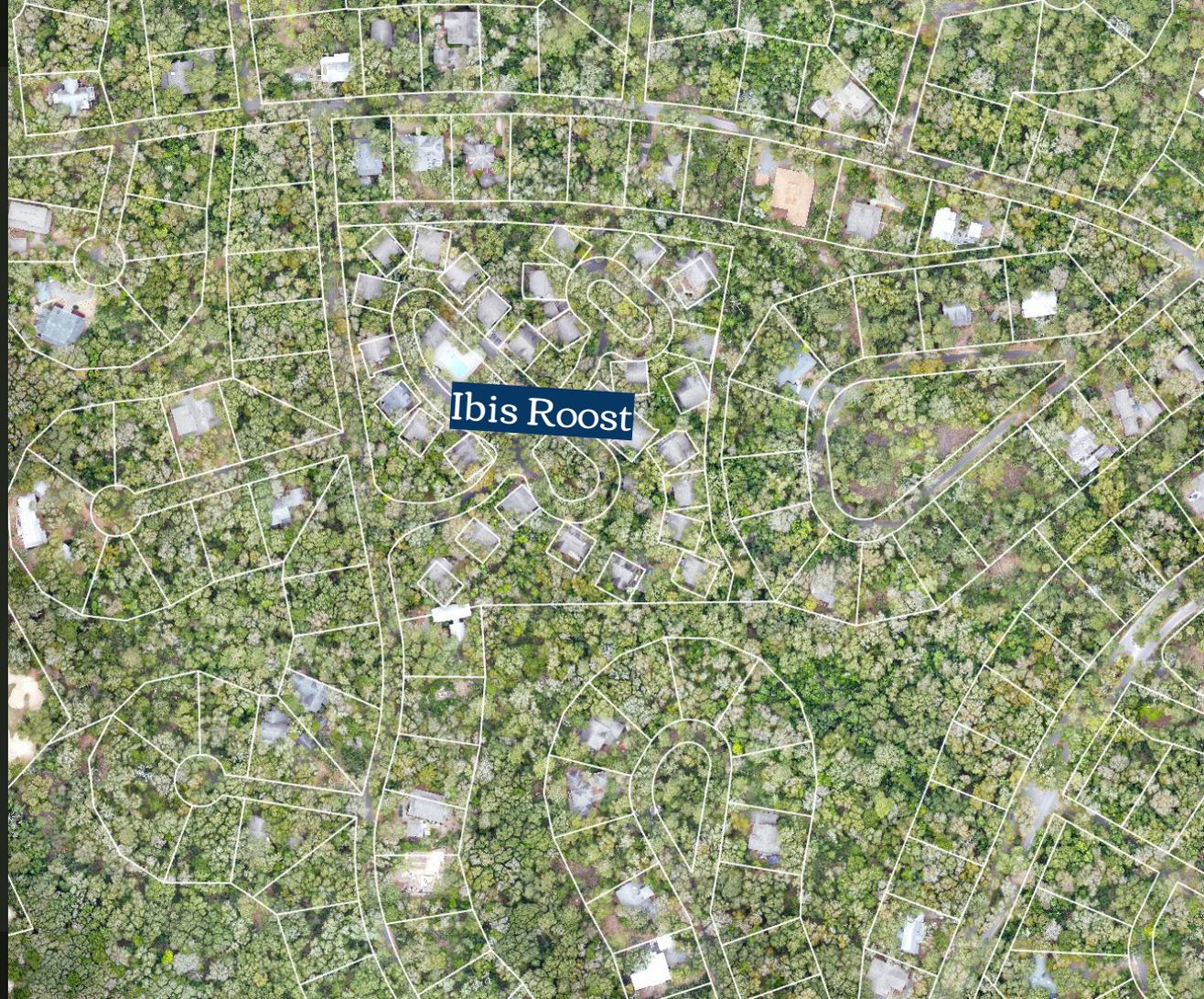
# BHI at Full Build Out



-  Future Structures
-  Existing Structures
-  Parcels
-  BHI Municipal Boundary
-  Lots Deemed "Unbuildable"
-  SILT Lots

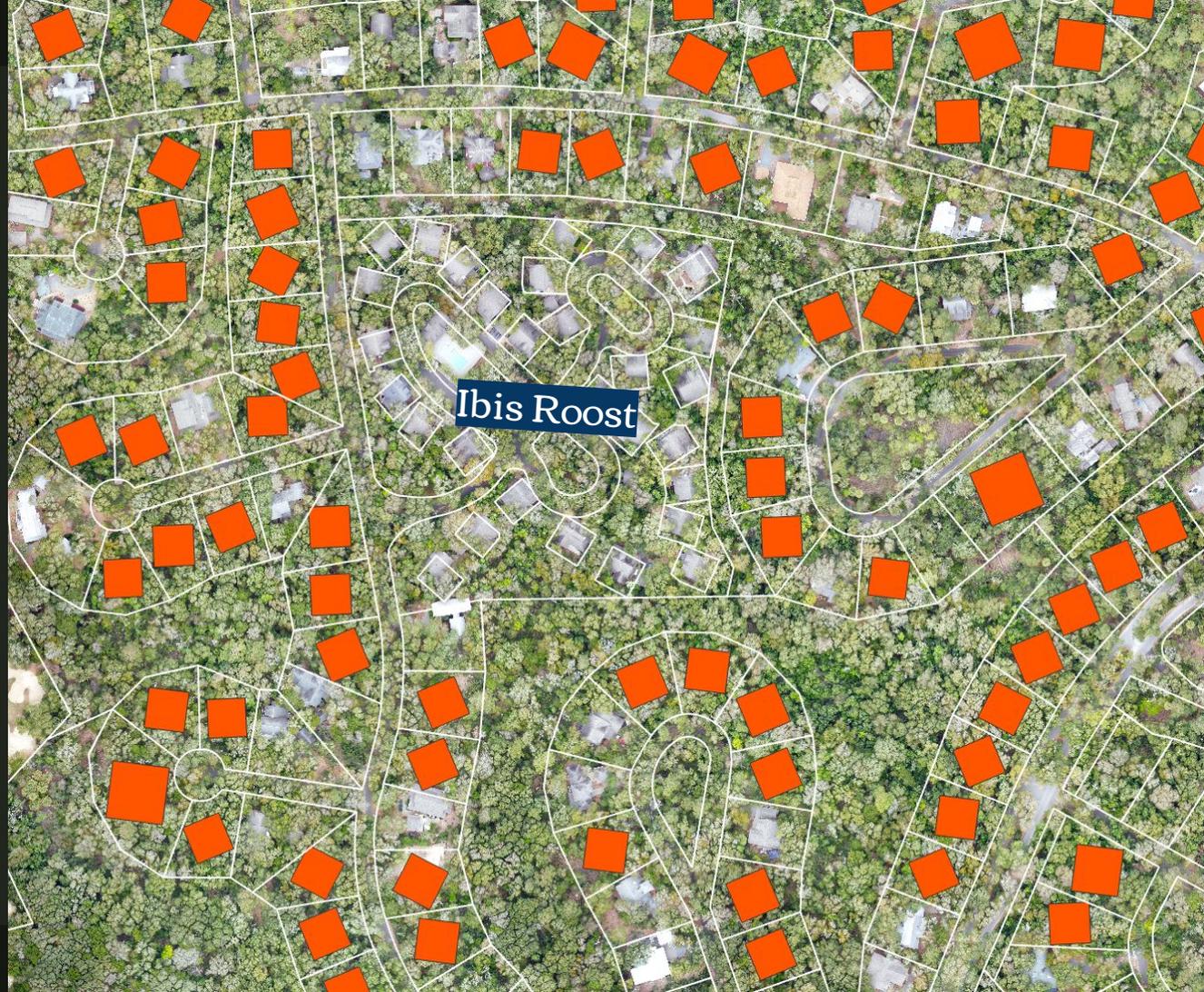


Drone footage of  
residential lots  
within the  
Maritime Forest



Drone footage of  
residential lots  
within the  
Maritime Forest

  Future  
Structures



At full build out with the current design guidelines of 25% impervious surface, BHI will lose approximately **185 acres** of Maritime forest.



140 Football  
Fields



# Scenario Analysis

Scenario 1	Impervious Surface	35% 
Scenario 2	Impervious Surface	 20%

# Scenario Comparison

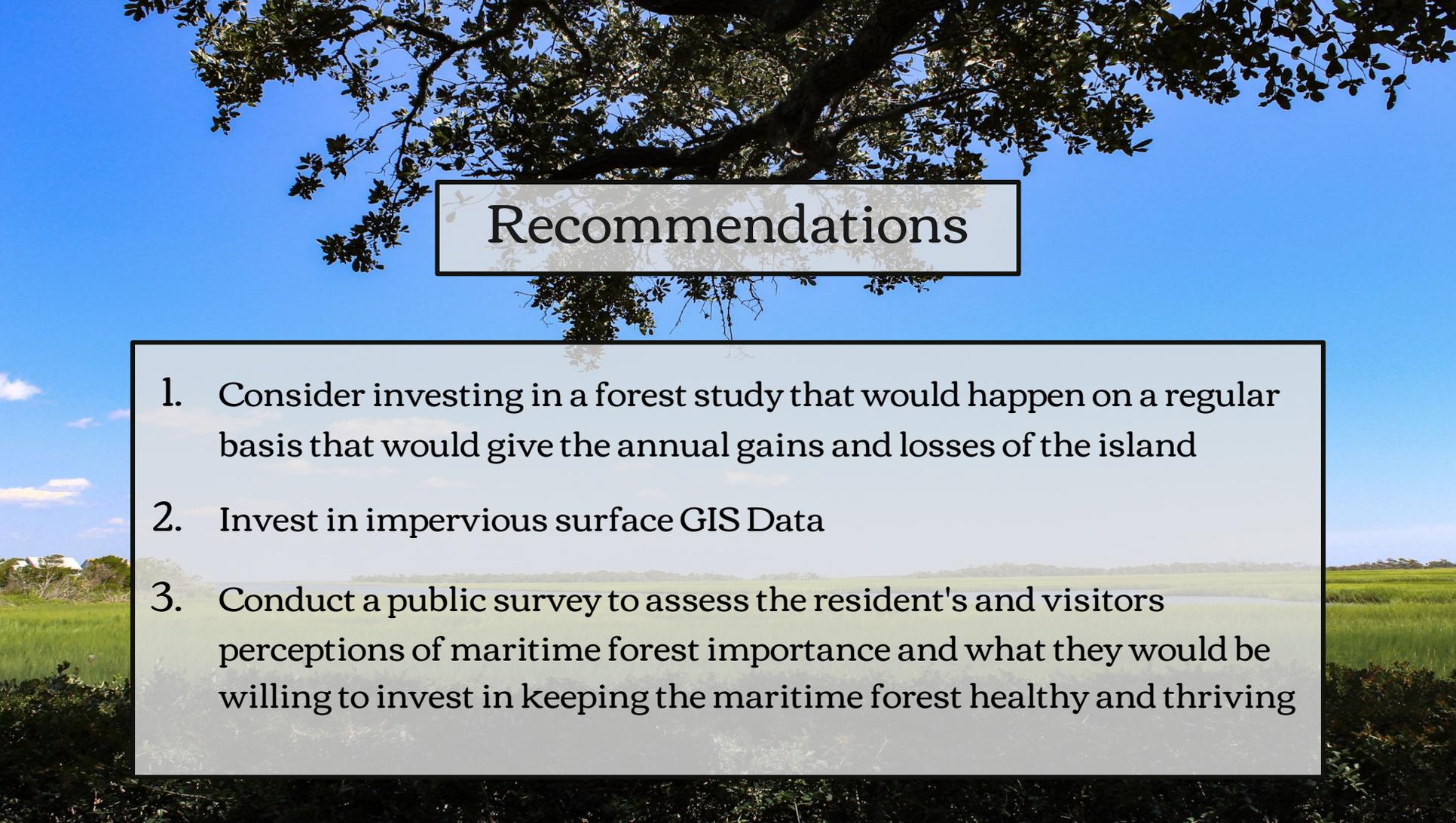
	Full Build Out (25%)	Scenario 1 (35%)	Scenario 2 (20%)
Maritime Forest (acres)	-185	-260	-160
Impervious Surface (acres)	+217	+304	+173

# Scenario Comparison

	Current Land Cover	Full Build Out (25%)	Scenario 1 (35%)	Scenario 2 (20%)
Maritime Forest (%)	52%	41%	37%	43%
Impervious Surface (%)	17%	28%	34%	26%

# Stakeholder Interviews

- 12 stakeholders were interviewed.
- Every single stakeholder expressed a desire to help preserve the maritime forest.
- Majority of stakeholders felt confident in the current BHA landscape guidelines, however they need to be continuously updated and reviewed.
- Main concerns:
  - Enforcement of the BHA guidelines
  - Proper education of new home owners and new builders on the island.



## Recommendations

1. Consider investing in a forest study that would happen on a regular basis that would give the annual gains and losses of the island
2. Invest in impervious surface GIS Data
3. Conduct a public survey to assess the resident's and visitors perceptions of maritime forest importance and what they would be willing to invest in keeping the maritime forest healthy and thriving

The BHI community has the power to  
decide what future scenario will occur!

