

Welcome!

The program will begin soon.
You will not hear audio until we begin.



Developing Natural Capital

Technology-Driven Regenerative Practices for Energy Assets

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Co-Founder & CEO
NatrX, Inc.

John Kelly
Co-Founder & Partner
Active Capital Partners

NATRX

ACTIVE CAPITAL PARTNERS

May 31st, 2023



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Agenda



- The Big Picture
 - Nature as a Service: Three Concepts for Scale
- The Problem: The Anthropocene Disruption
- The Opportunity: Technology to Unlock the Power of Nature
- Case Study: Hellhole Bayou
- ROI: A Framework for Valuing Nature
- Case Study: Bayou Teche
- What do Investors and Consumers Want?



An New Business Model Based on Nature?



Take-Away #1: Don't be afraid to measure nature



Take-Away #2: Nature always wins

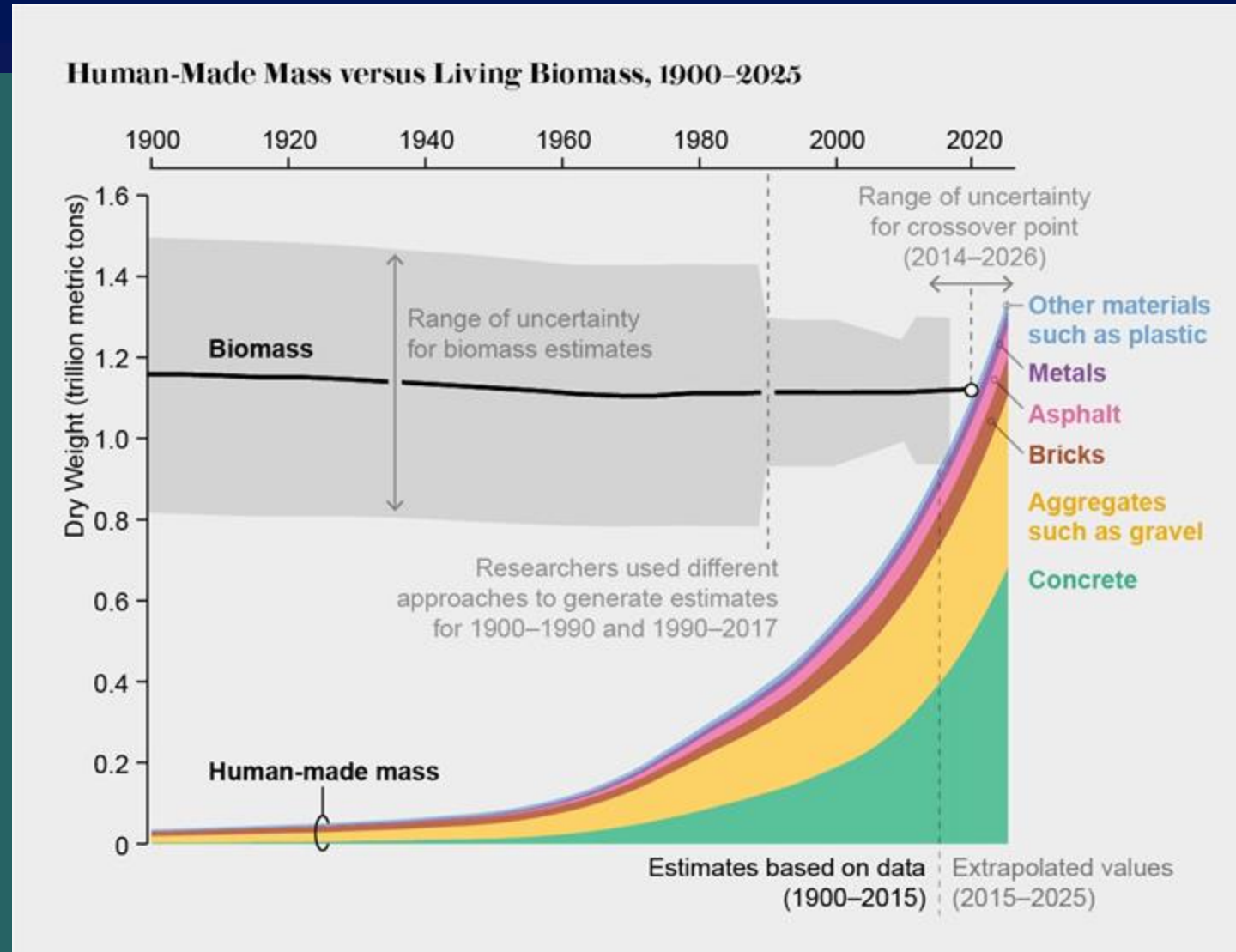


Take-Away #3: Account for the work, share the rest



The Magnitude of the Problem (and opportunity)

Hardscapes are eating the world!



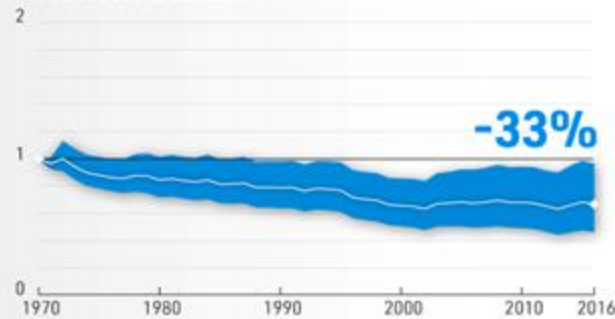
We are losing species.

The Living Planet Index (LPI) tracks the abundance of mammals, birds, fish, reptiles, and amphibians across the globe.



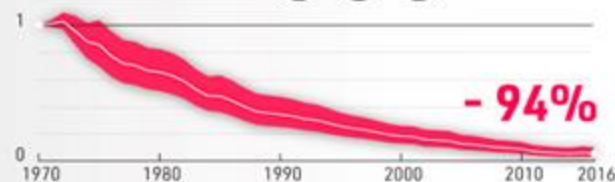
Between 1970 and 2016, vertebrate population sizes dropped by **68%** on average worldwide. However, this rate of this loss varies from region to region.

NORTH AMERICA

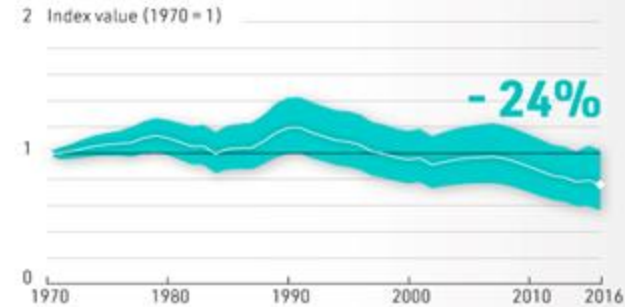


LATIN AMERICA & CARIBBEAN

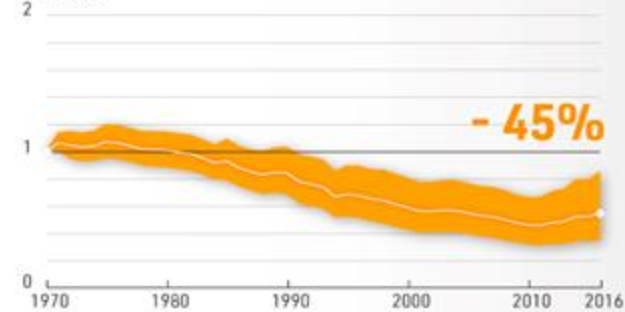
Latin America & Caribbean has seen the largest drop in biodiversity at **94%**, mainly driven by a significant decline in reptile, amphibian, and fish populations.



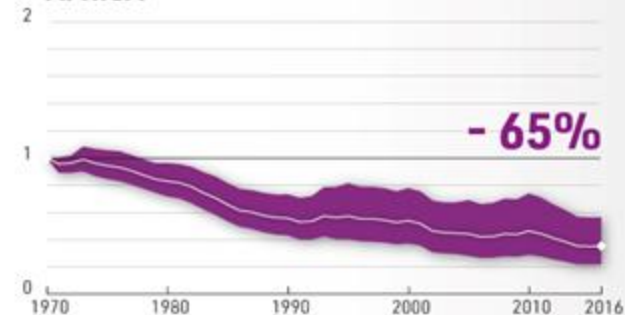
EUROPE



ASIA



AFRICA



Sea level rise threatens \$100T in assets



We have lost 150,000,000,000 tons of protective reefs.



Existing tools are expensive.



Concrete Pours

\$1,000 billion in spend



Armoring

\$100 billion spend



Attorneys & Lobbyists

\$75B billion in spend



Negative Feedback Loops



Ineffective Resource
Use & Impact

Negative Social
Consensus



Energy Security
Problems

Poor Permitting
and Financing
Environment



Technology Opportunity

**Digital Services &
Advanced Manufacturing**

Artificial Intelligence

Geotechnical Fundamentals

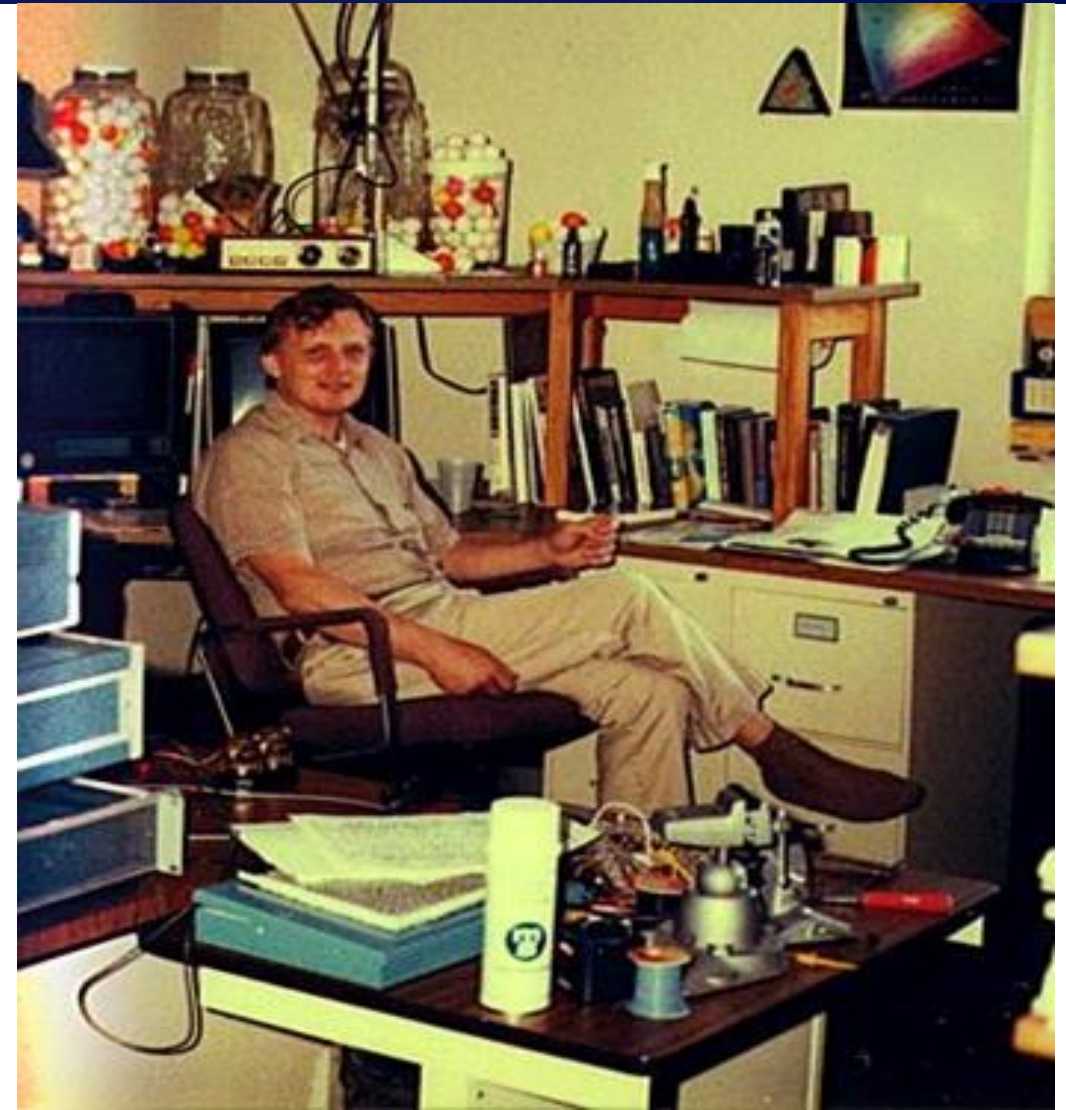
Remote Sensing & GIS Tools

Moravec's paradox 1988

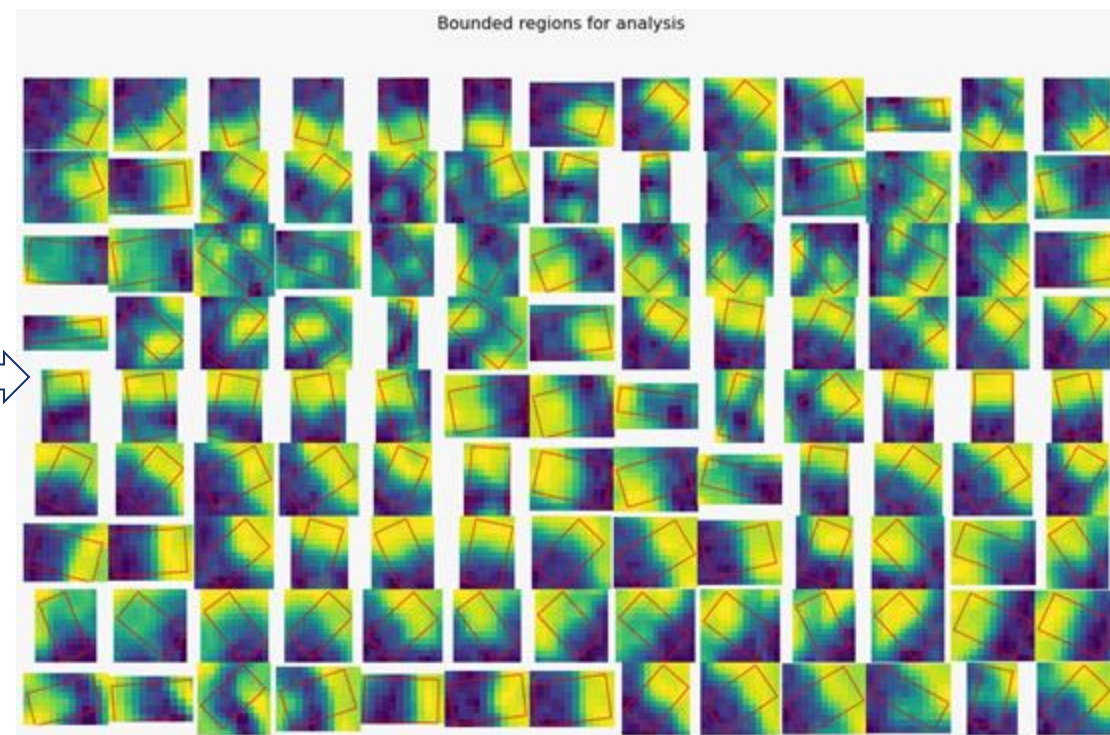
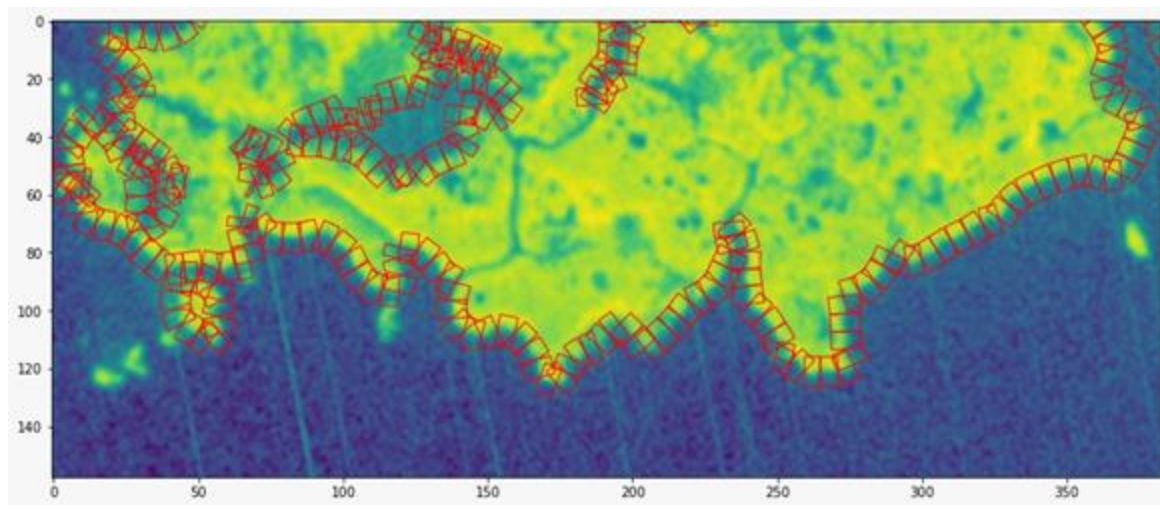


*Artificial intelligence can easily
handle computations people find
difficult*

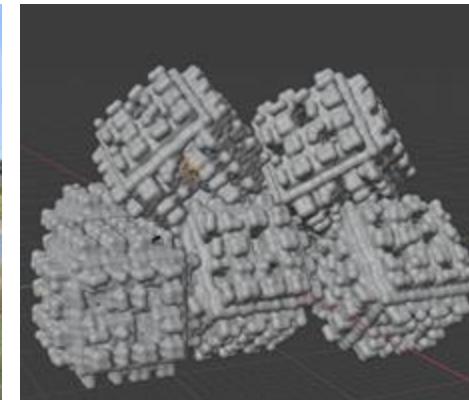
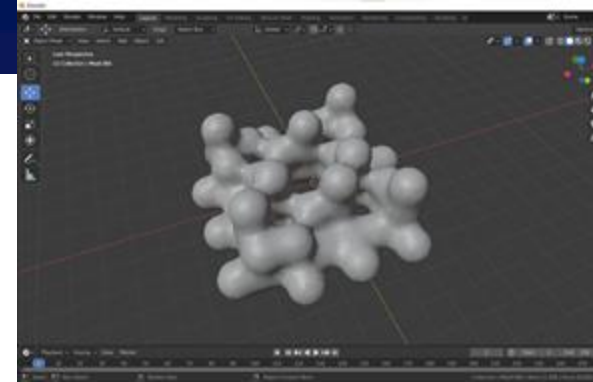
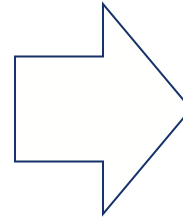
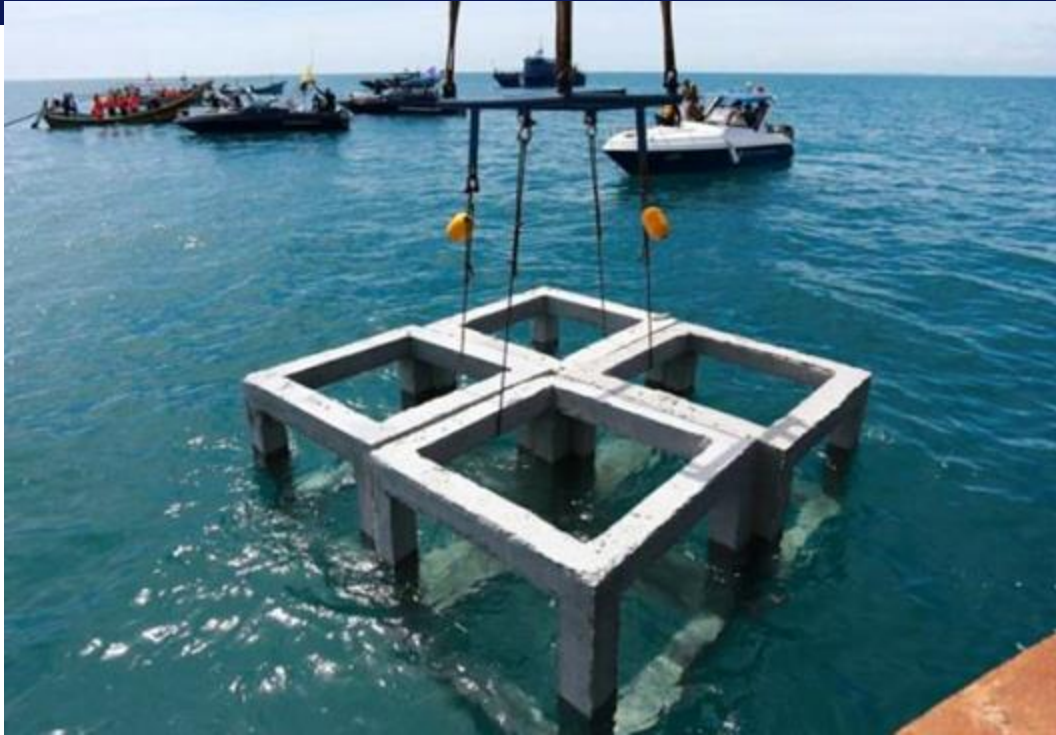
*...but AI struggles with tasks that
are easy to humans.*



We must use technology to analyze natural systems



Building Natural Assets Requires Technology



“Structurally complex habitats tend to contain more species and higher total abundance.”

Torres-Pulliza, Damaris, et al. "A geometric basis for surface habitat complexity and biodiversity." *Nature Ecology & Evolution* 4.11 (2020): 1495-1501.

Why Nature Based?

After Category 4 Storm Hurricane Laura



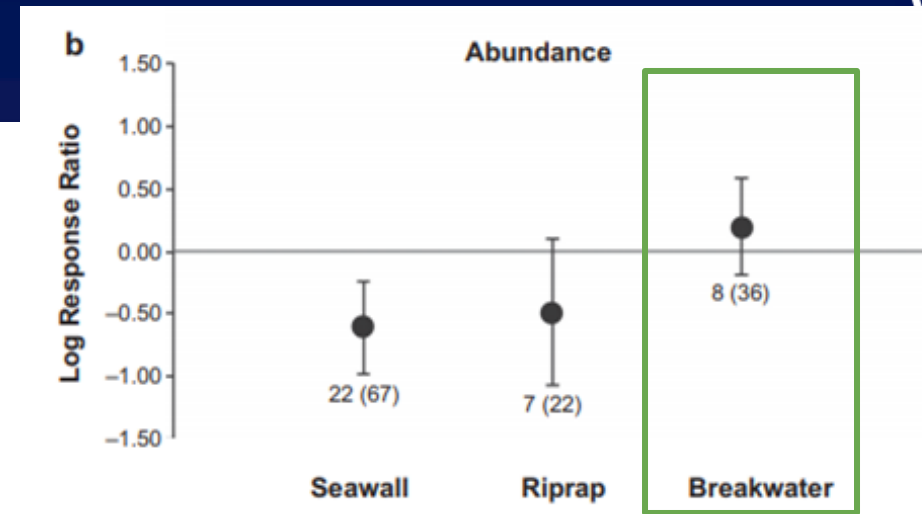
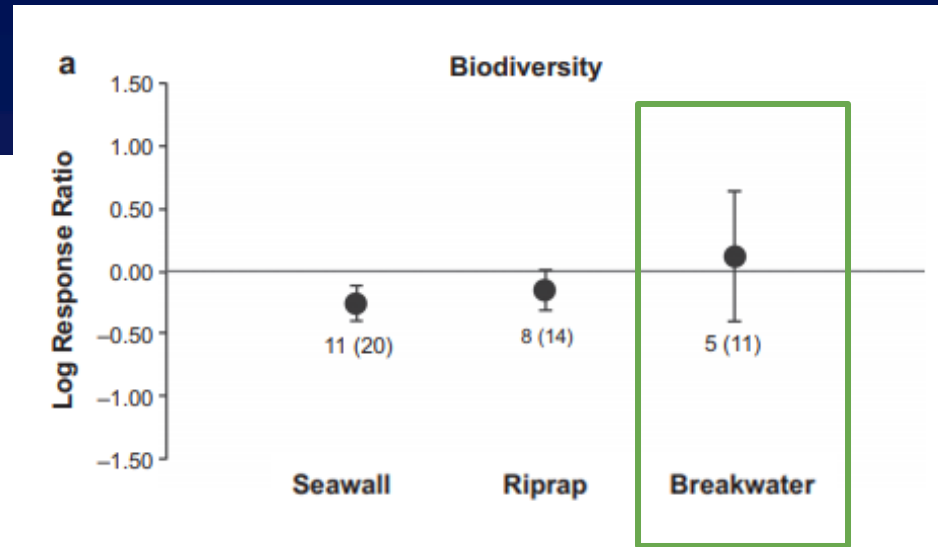
Traditional
Heavy Rock Breakwaters
10 tons / linear foot

Nature-Based
1.1 tons / linear foot

Case Study: Hellhole Bayou



New Ways of Techniques: Incorporating Biodiversity



Ecological Response
Plot: Gittman, Rachel K.,
et al. "Ecological
consequences of
shoreline hardening: a
meta-analysis."
Bioscience 66.9 (2016):
763-773.

New Tools: Advanced Manufacturing of “Cajun Coral”



New Tools: High Temporal & Spatial Resolution Satellite

2007



2005



Heathy Vegetation Reflectance

50%
NIR

8%
Red



NDVI = 0.72

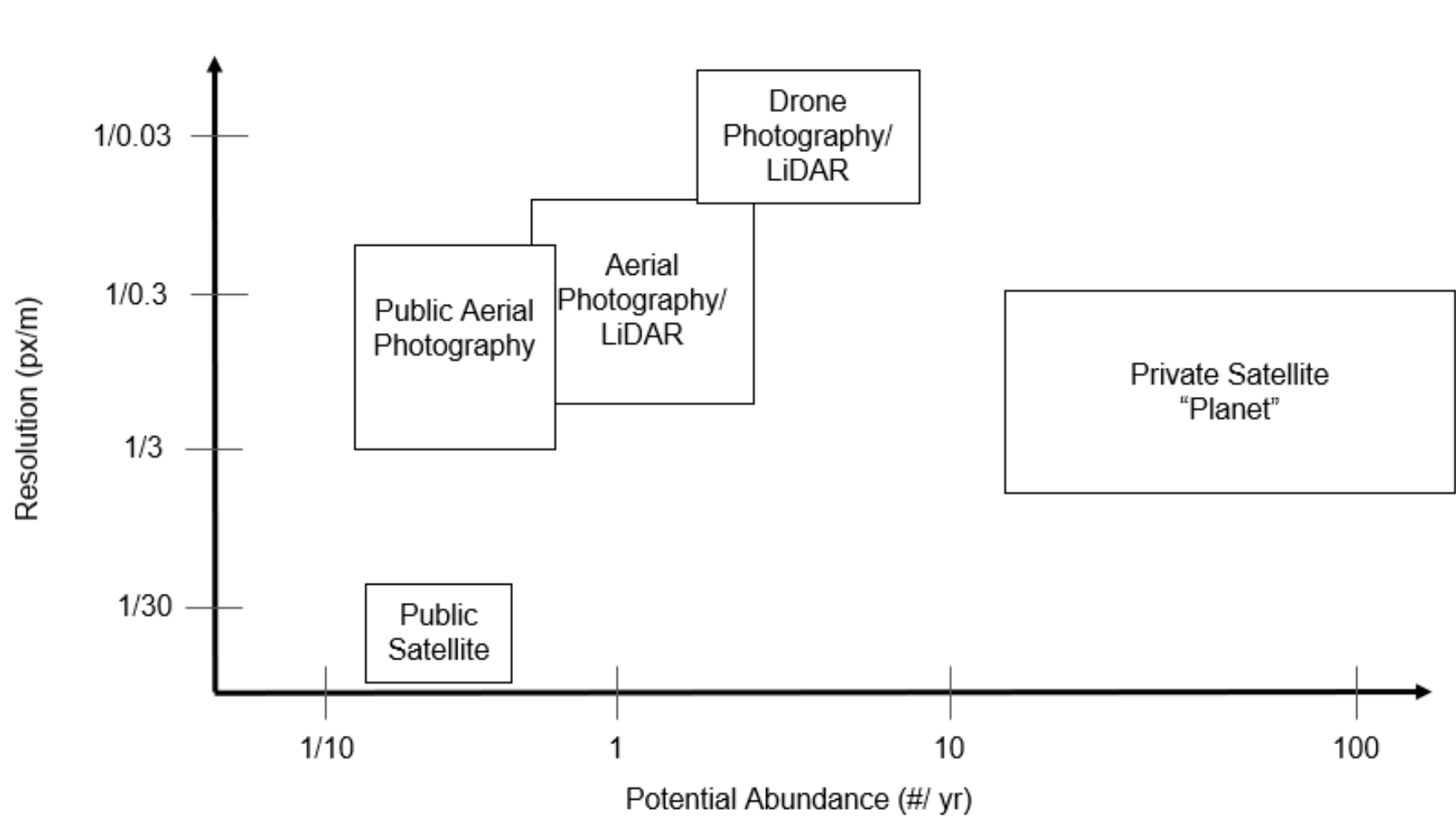
Stressed Vegetation Reflectance

40%
NIR

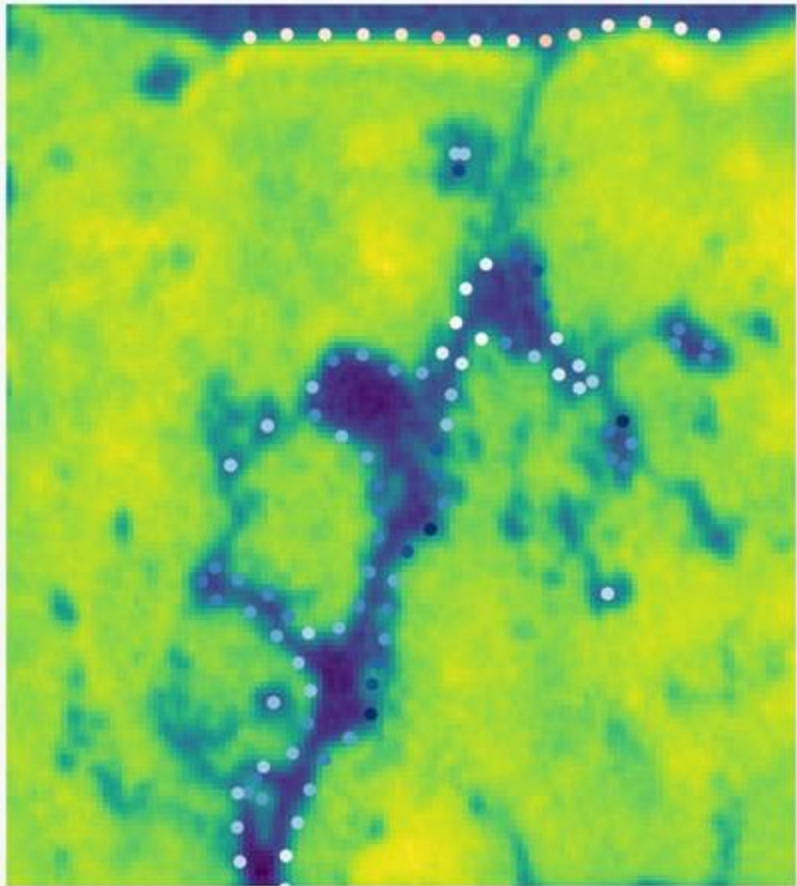
30%
Red



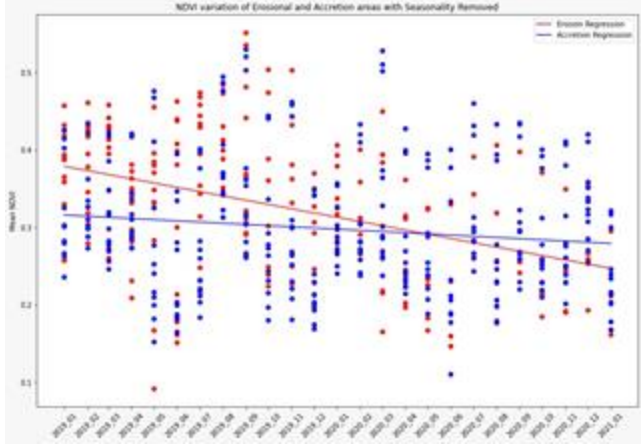
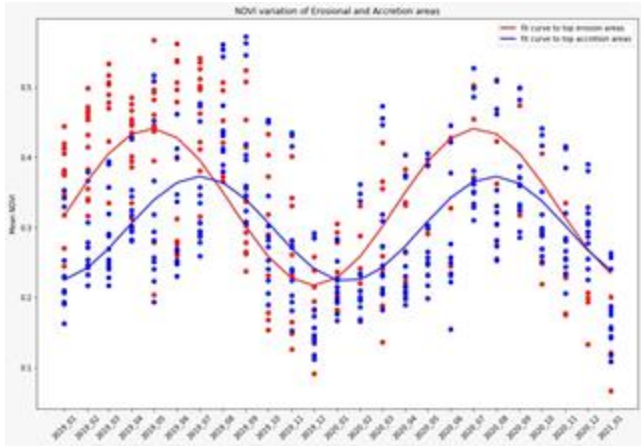
NDVI = 0.14



Hellhole Bayou: Address Erosion & Scour with Oyster Reef & Vegetation Solution



Land change in meters per year



Hellhole Bayou: Address Erosion & Scour with Oyster Reef & Vegetation Solution



Vegetative mats

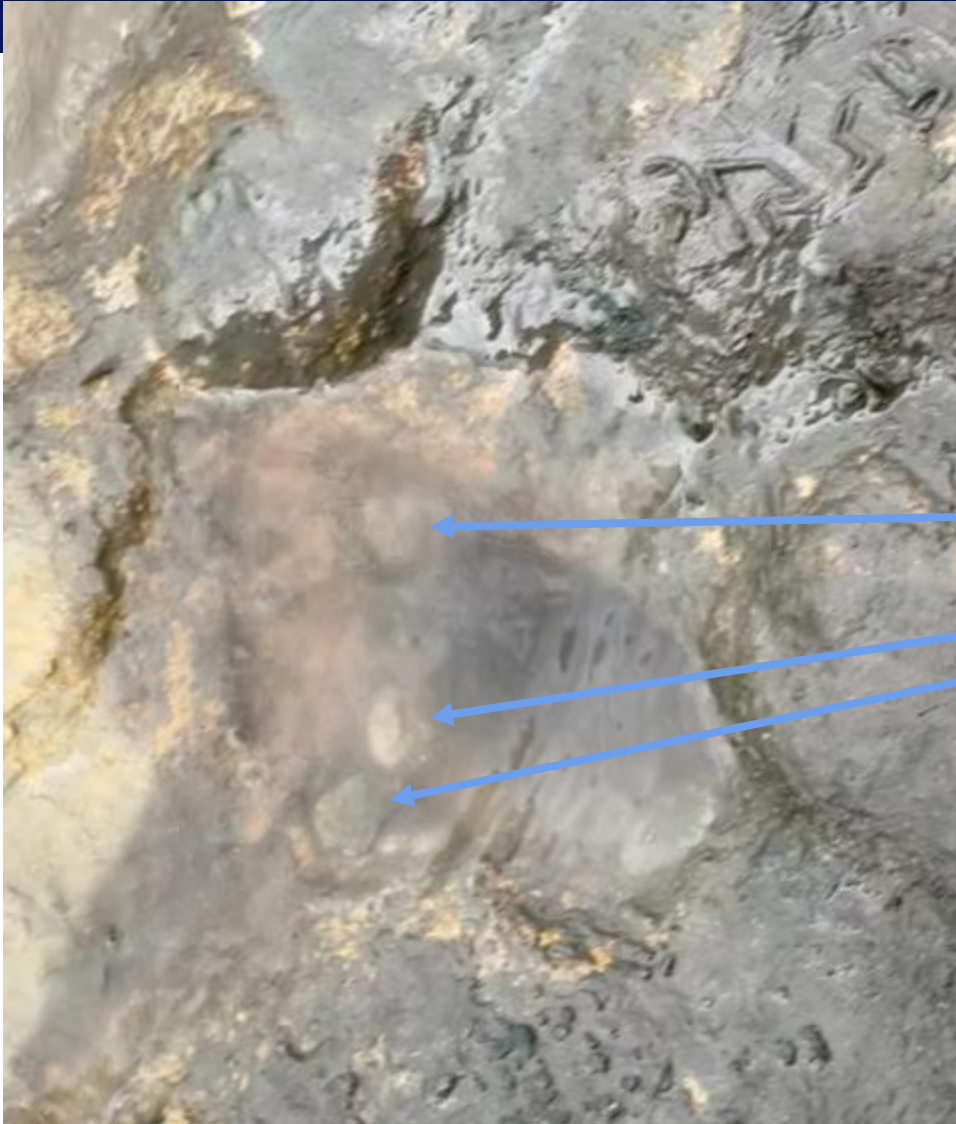
55 “flow-through”
cajun coral units

Hellhole Bayou: Address Erosion & Scour with Oyster Reef & Vegetation Solution



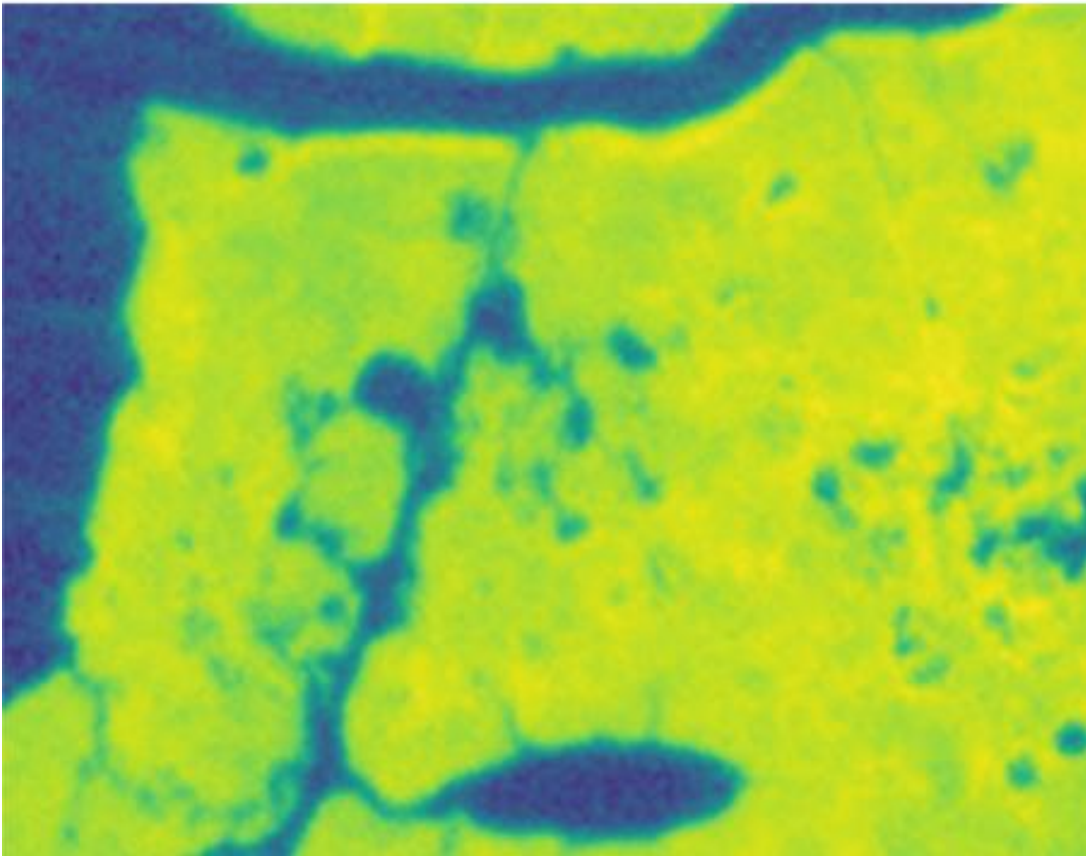
Area behind the restored reef system over asset protected. Water flows through voids slowly, designed to drop sediment.

Design to close up slowly with oysters over time to avoid scour.

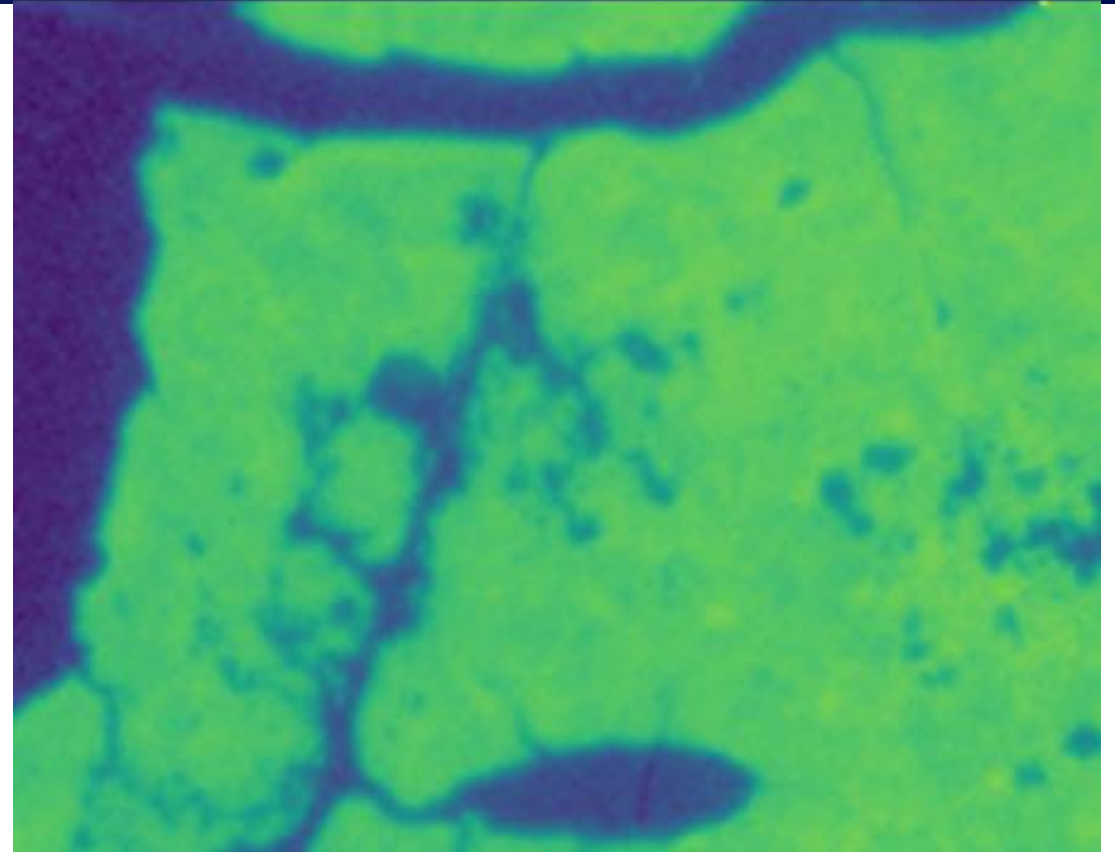


5-Month Check-Up:
Baby Oysters
Attachment Observed
in Voids

Hellhole Bayou: Multispectral Satellite Monitoring / NDVI



April 2021



April 2022

Hellhole Bayou: Estimated Maximum Co-Benefits



9.6 acres of biodiverse wetlands in an area that was previously eroding to open water at 180m² per year.

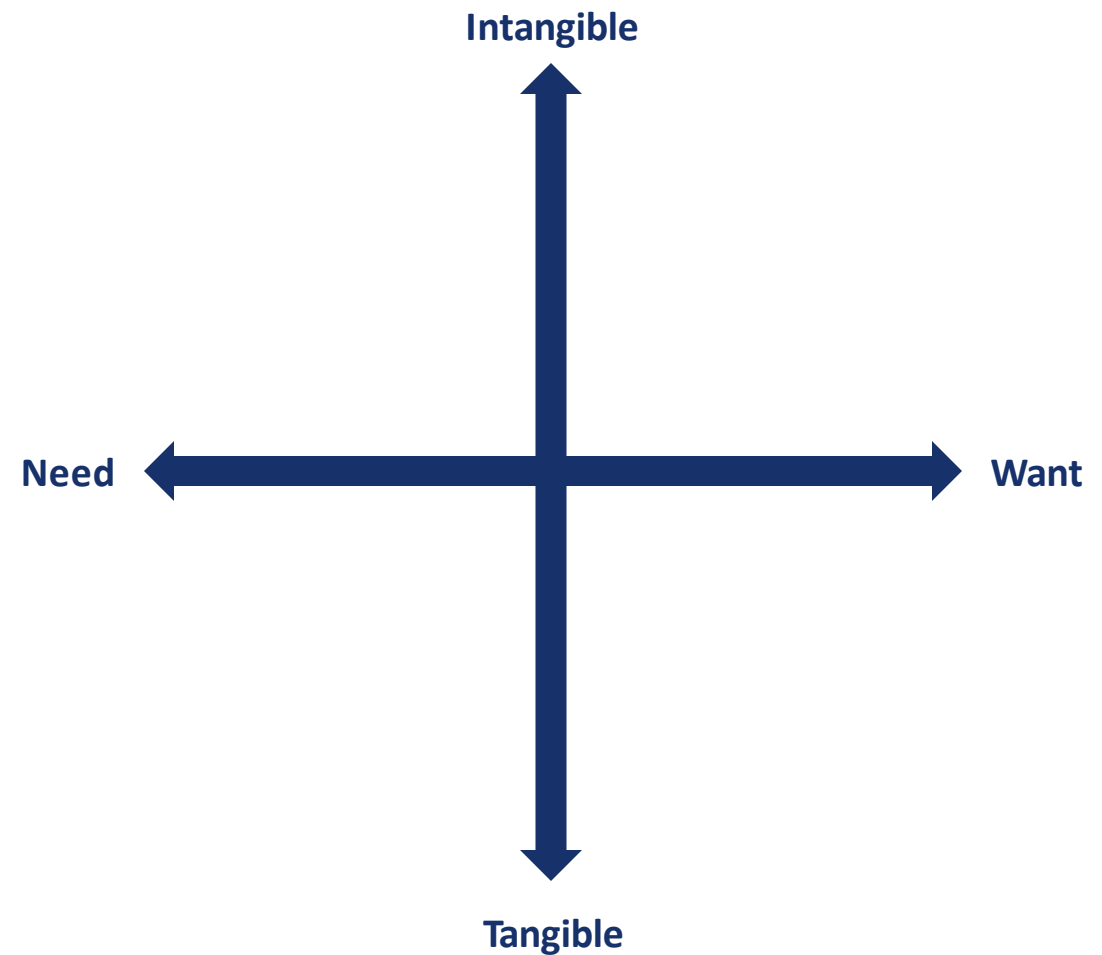


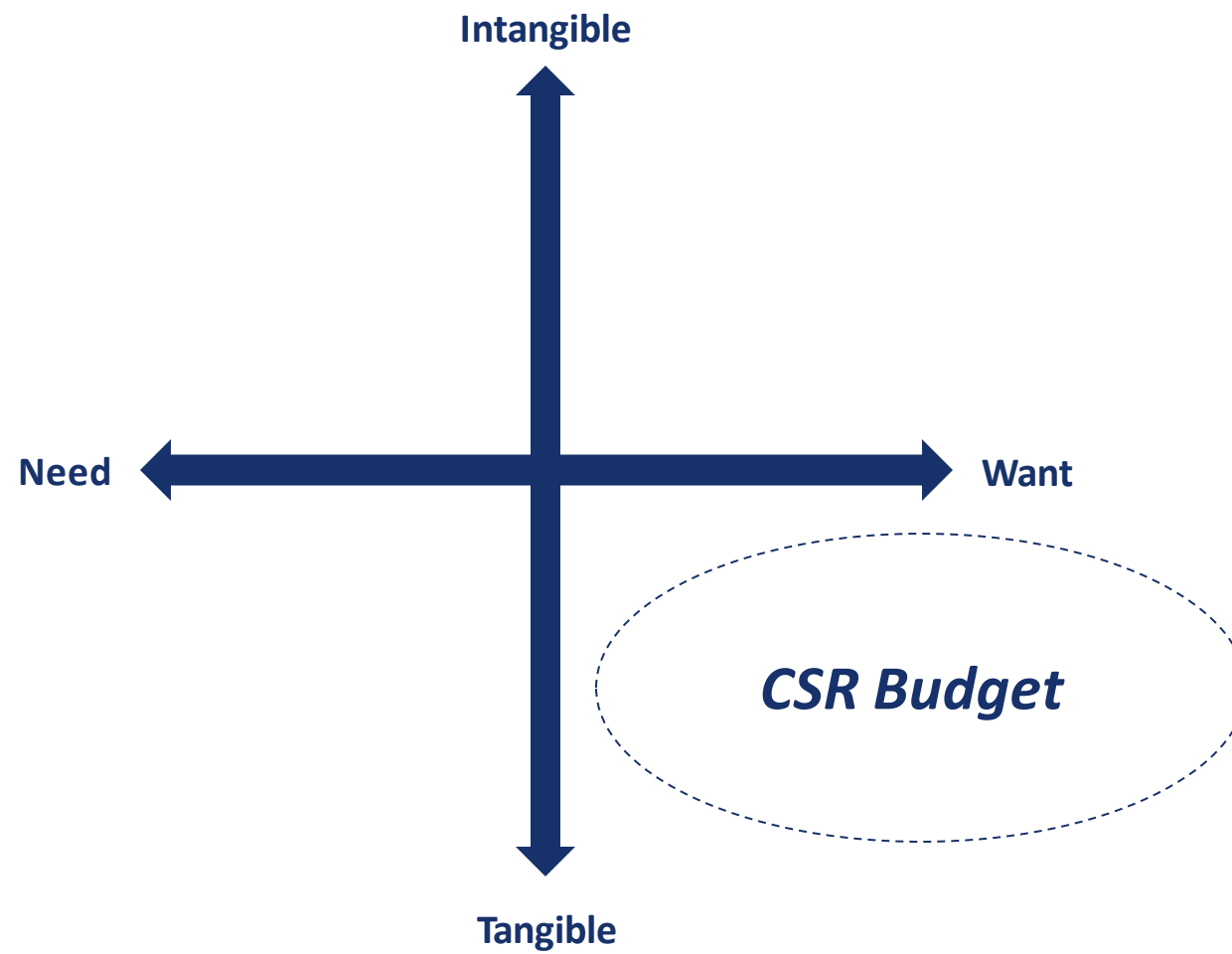
270M gallons of clean water from natural filter feeders annually.

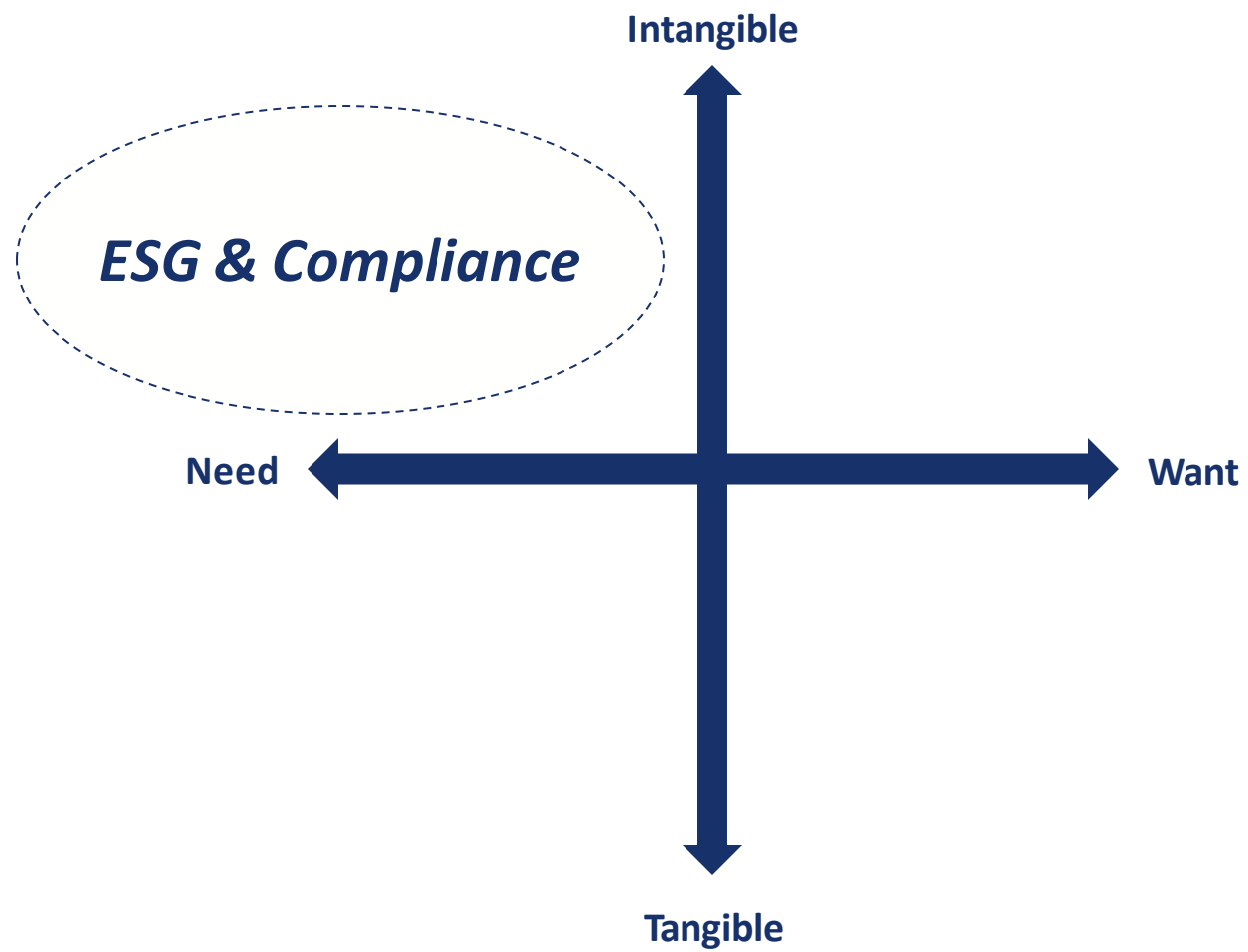


26 tons blue carbon / year equivalent to six cars off the road permanently (US EPA).

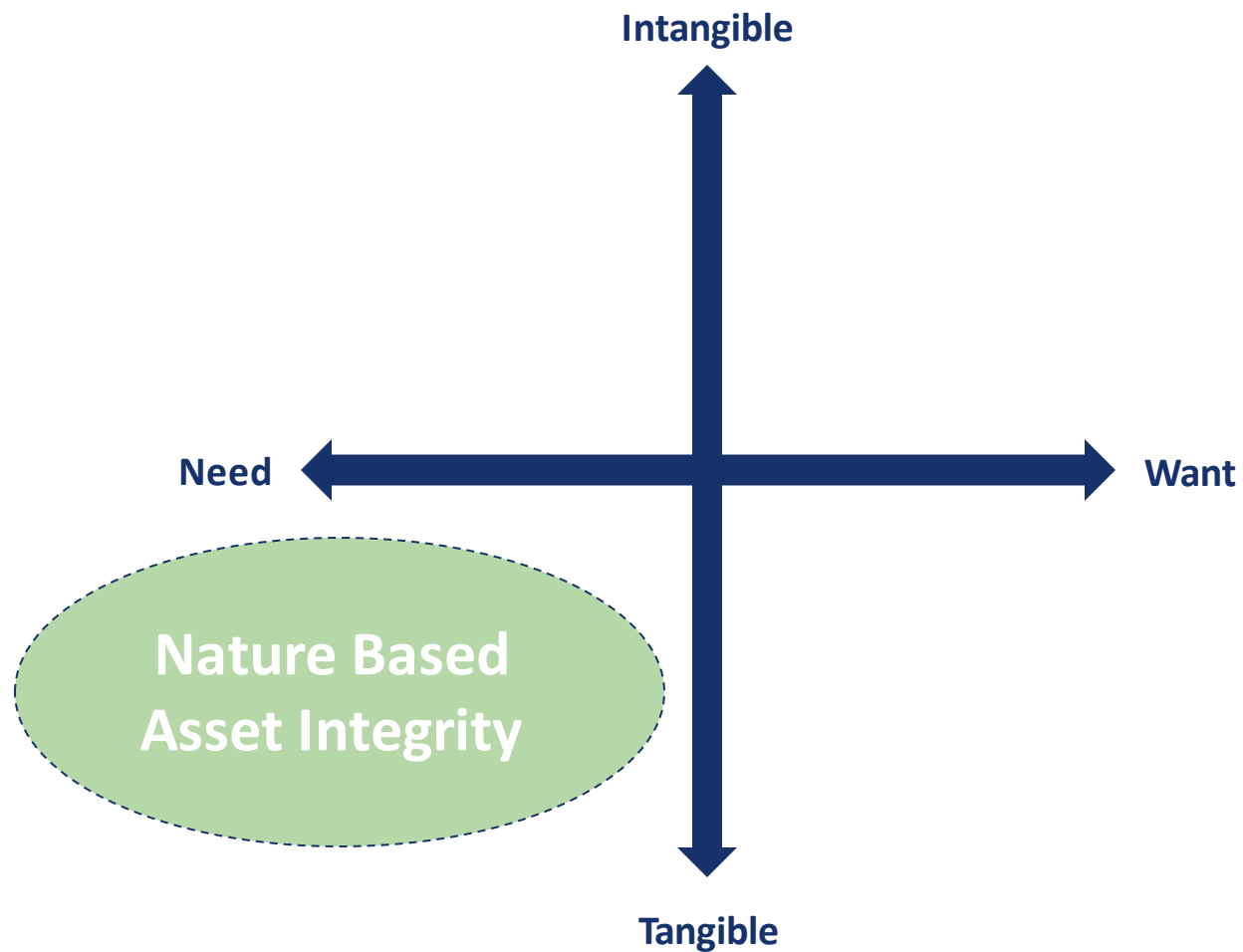
ROI Framework For Natural Systems

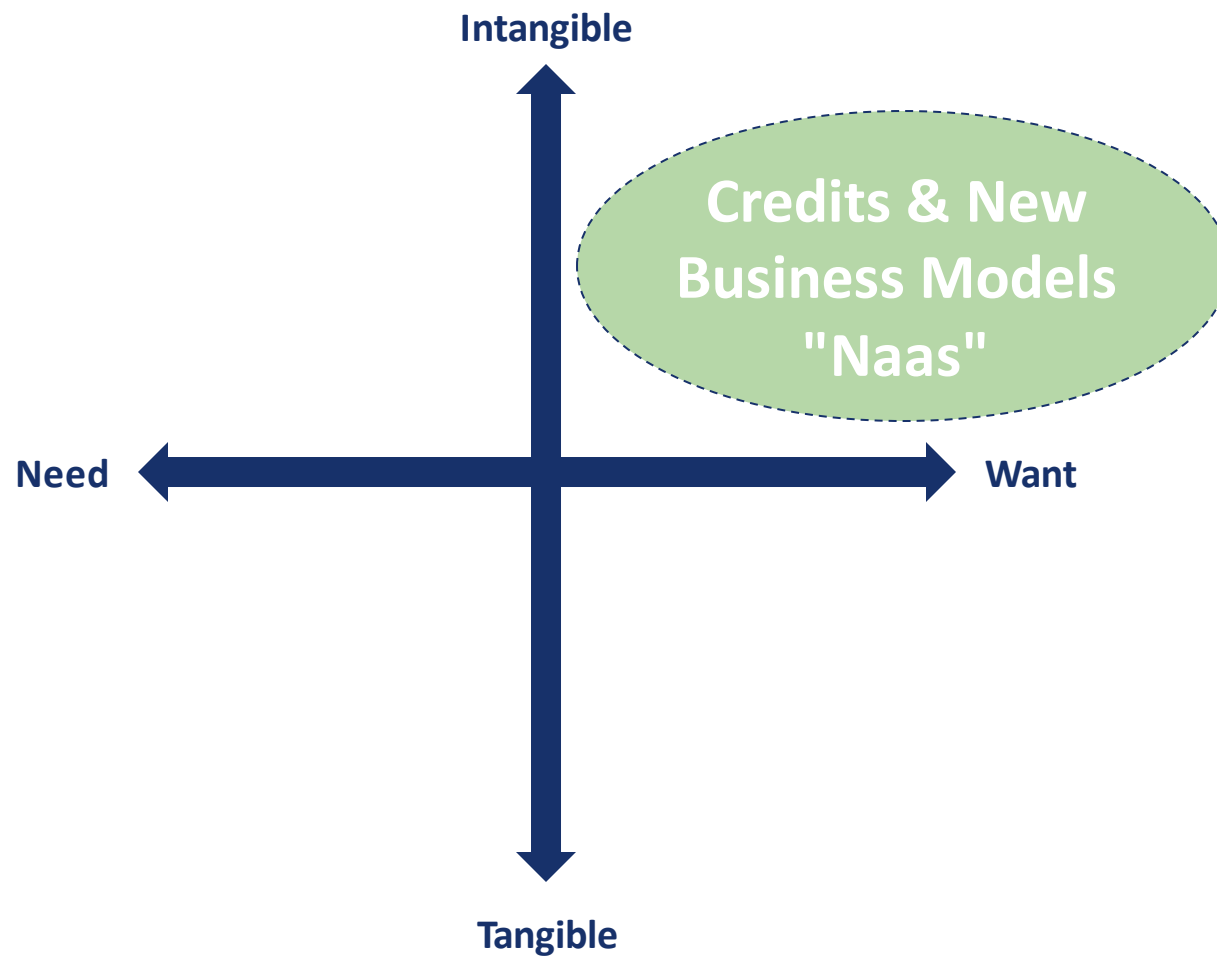






*“Value the Work
Accomplished”*



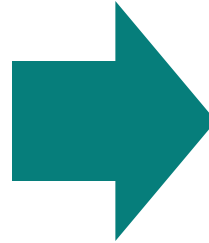


*"Baseline, Measure,
and Sell Credits
When Possible and
Appropriate"*

A woman in a blue shirt, white beanie, and red boots is walking across a grassy field, carrying a large orange bucket and holding a bundle of dry grass. In the background, a man in a grey shirt and blue jeans is walking away. A large concrete bridge spans the horizon under a clear blue sky.

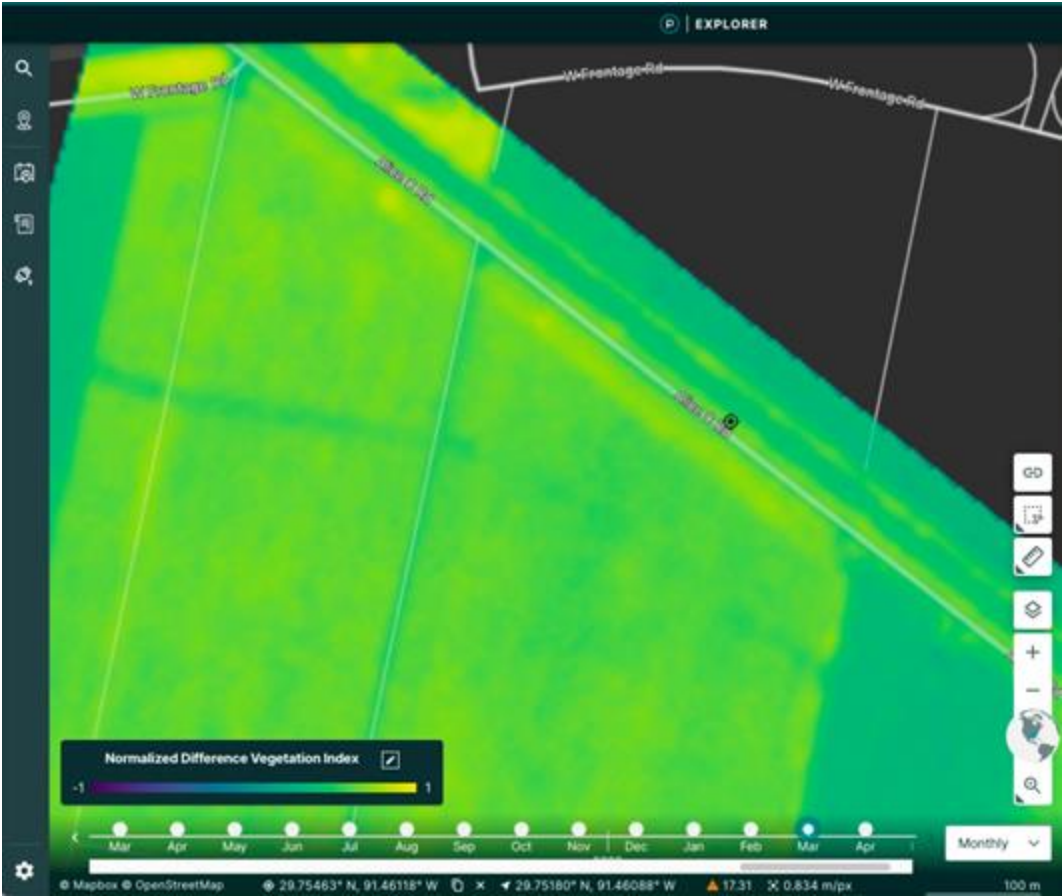
Case Study: Bayou Teche Wildflowers of Energy

Physical Results: 4 Months



Satellite NDVI Monitoring

Shell Pipeline Company Right of Way

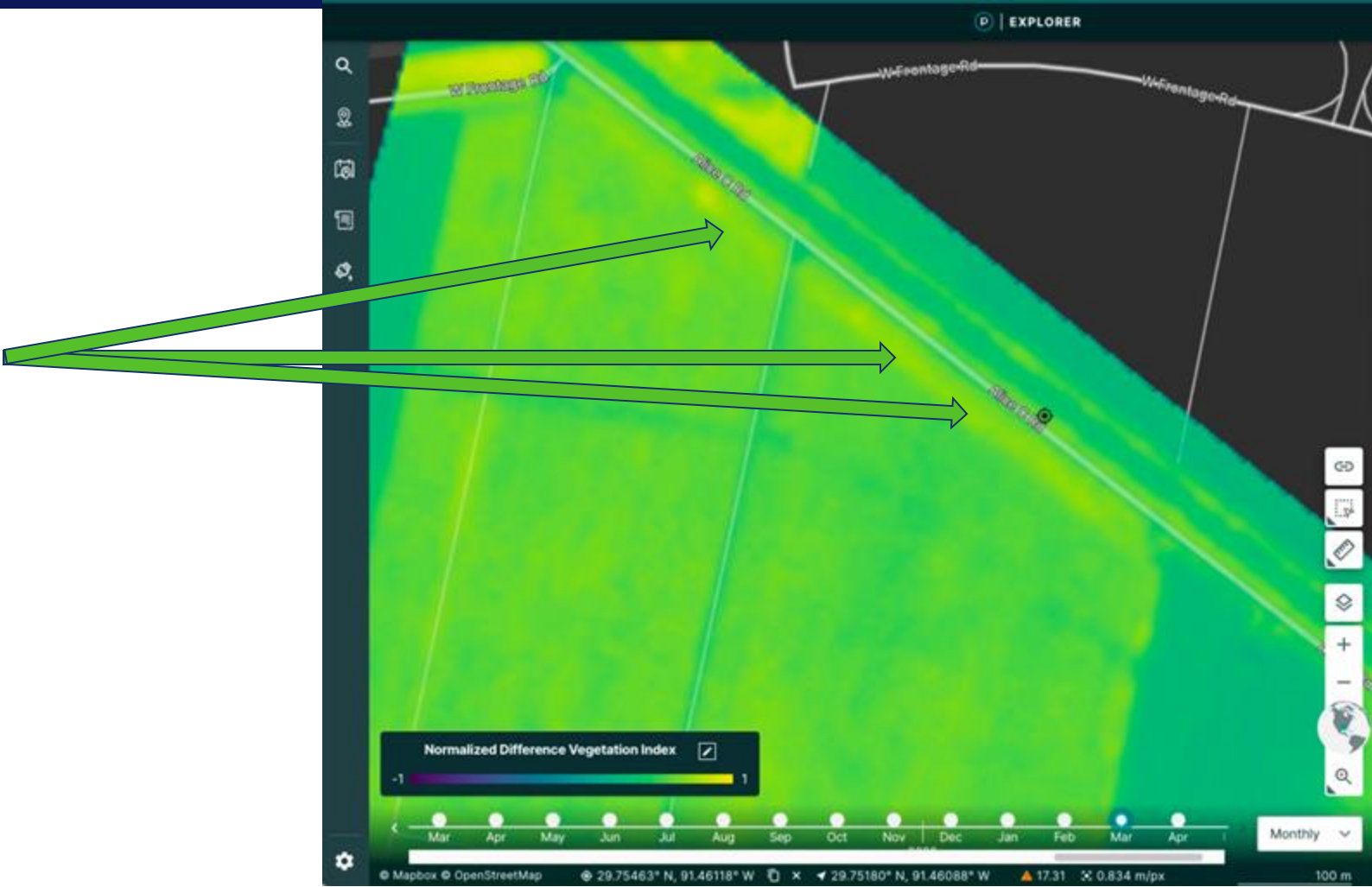


Reference Area (not planted)

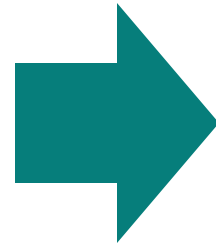
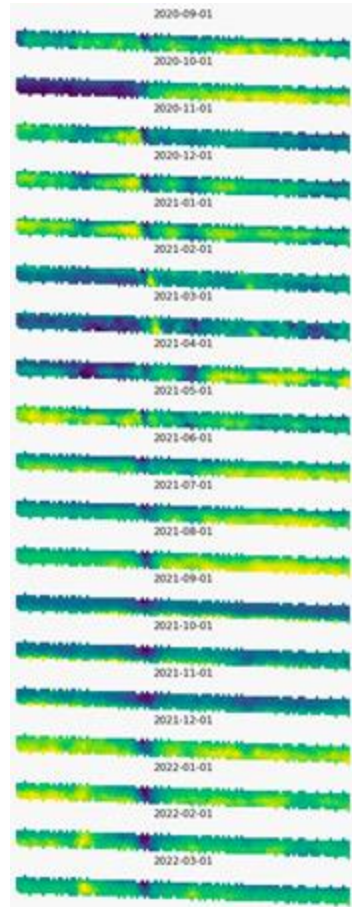
Satellite NDVI Monitoring



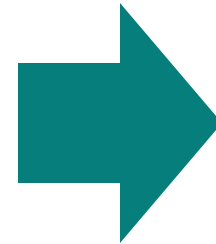
Increased vegetation health
and density along biodiverse
planted area



Satellite Analysis Can Provide Simple Metrics

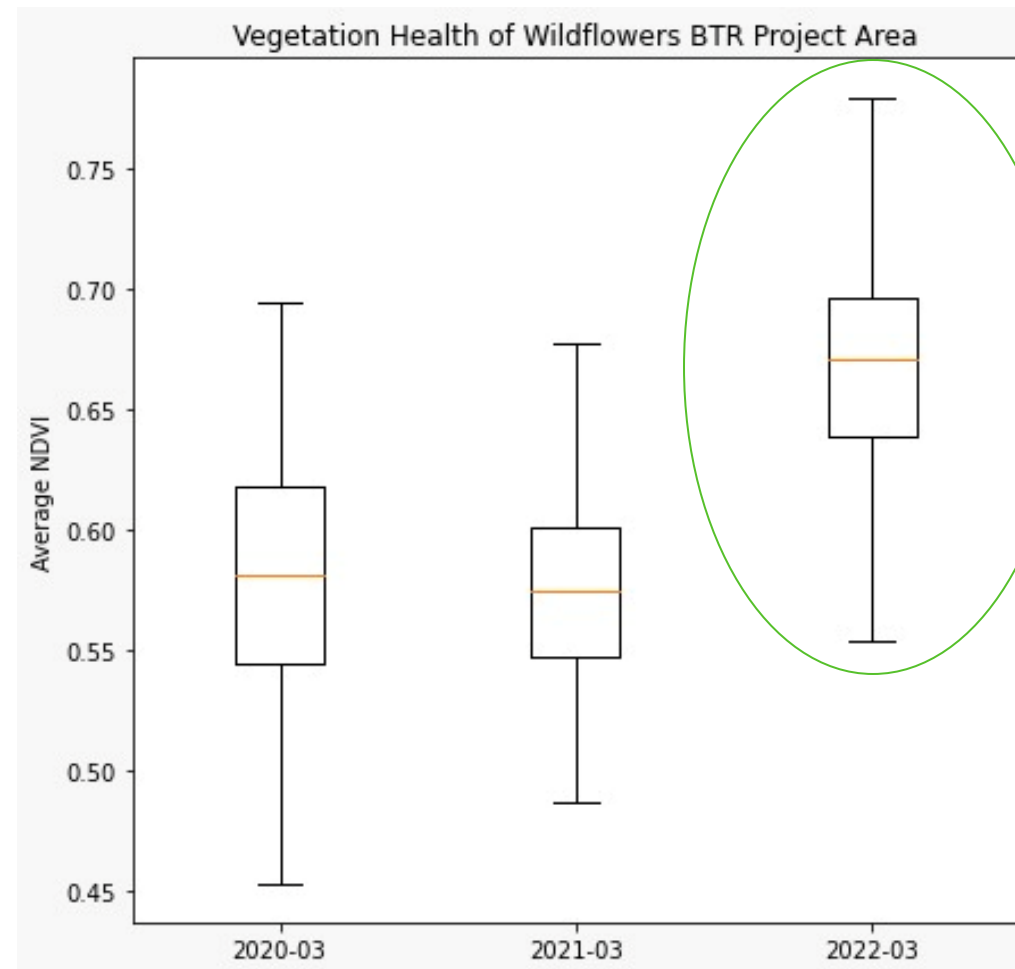


Sampling &
Statistical
Analysis



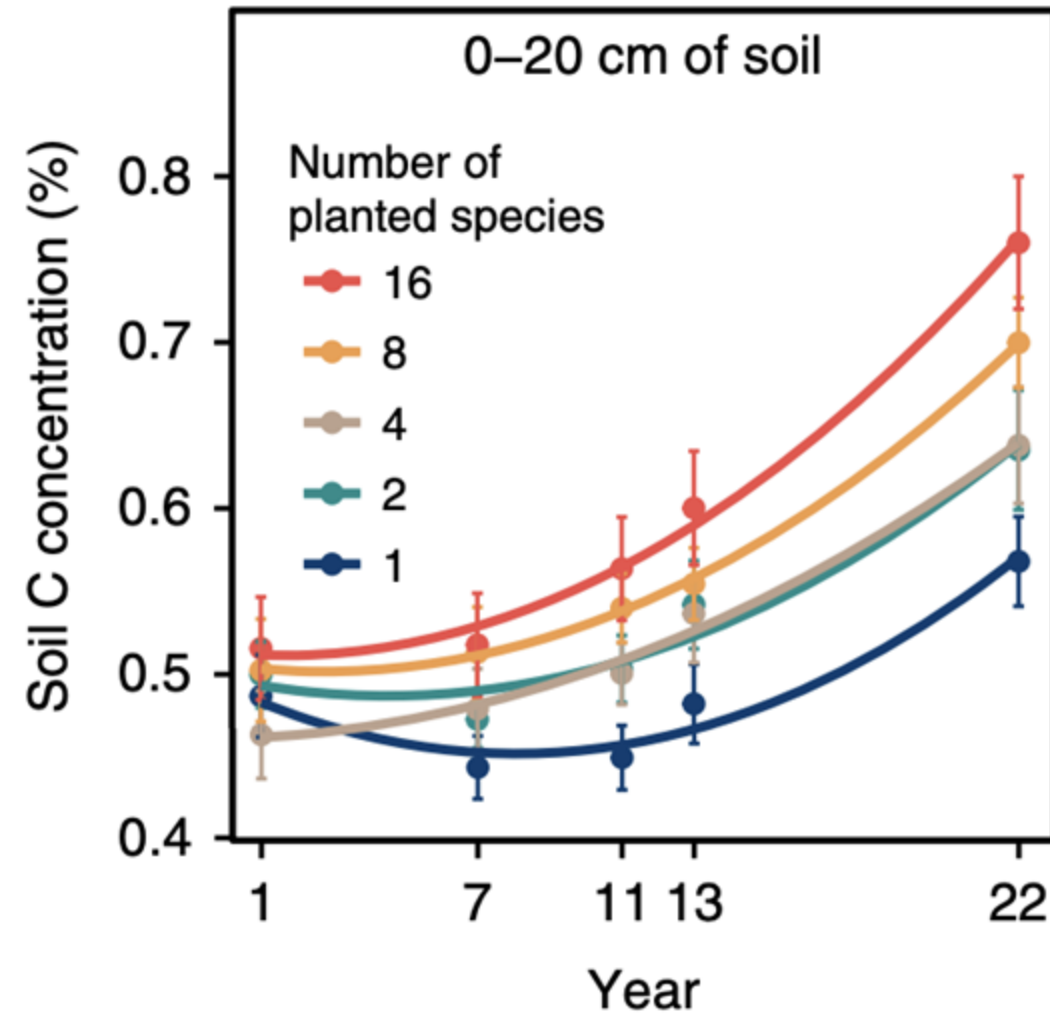
Compare
with on-site
findings &
report
outcomes.

Vegetation Health Results vs. Prior Years



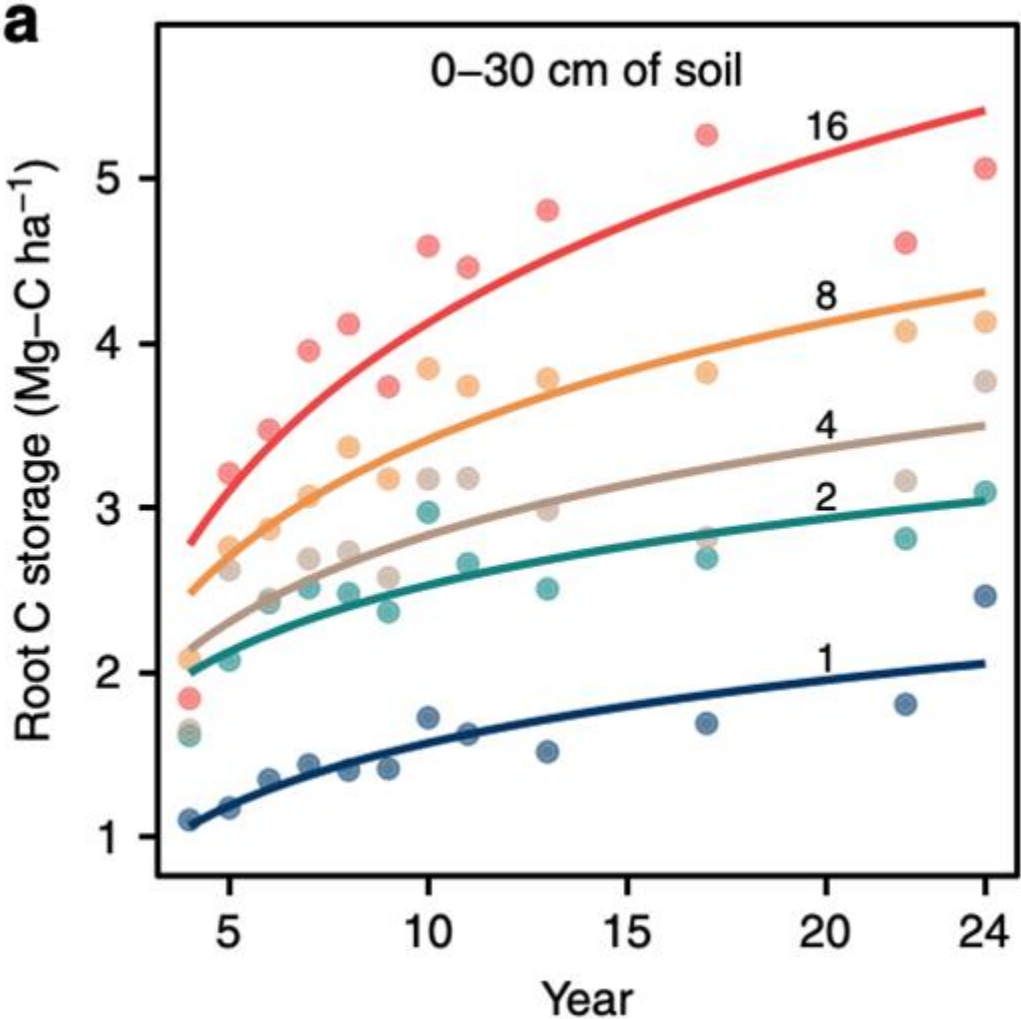
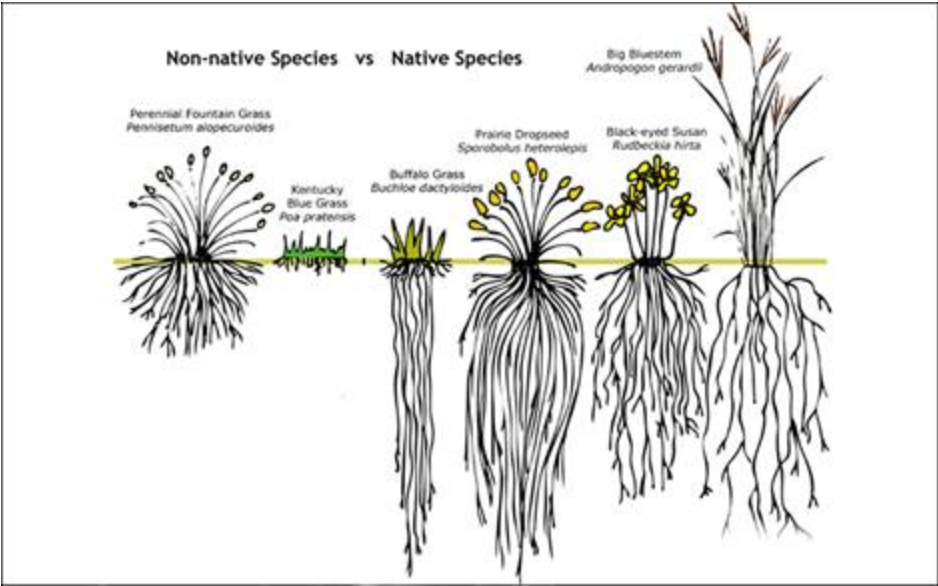
Improved post-planting
vegetation health in right
of way post-planting.

Soil Carbon Benefits to Biodiversity



Src: Yang, Yi, et al. "Soil carbon sequestration accelerated by restoration of grassland biodiversity." Nature communications 10.1 (2019): 1-7.

Root Carbon Benefits to Biodiversity



Estimated Overall Benefits Per 1000 Miles



385,000 Tons
Increased CO₂
Sequestration
per Decade



\$4M+ in
potential carbon
credit value



Potential
mowing &
maintenance
savings



7.2B gallons prevented
flood runoff + Water
Quality Improvement

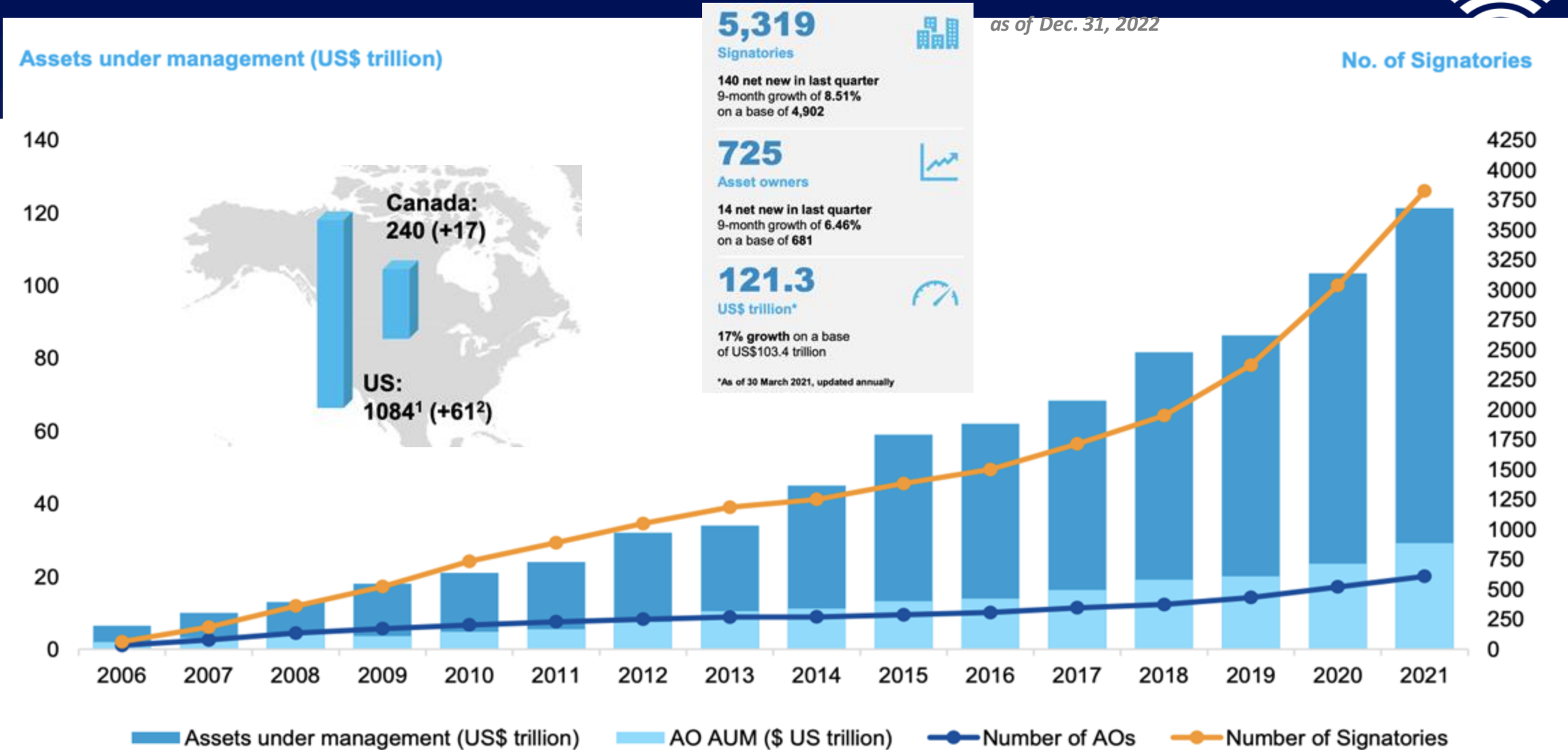


Enhanced
Biodiversity and
Nutrient Balance



What do Investors Want out of Productive Assets?

PRI Signatory Growth (Investors)

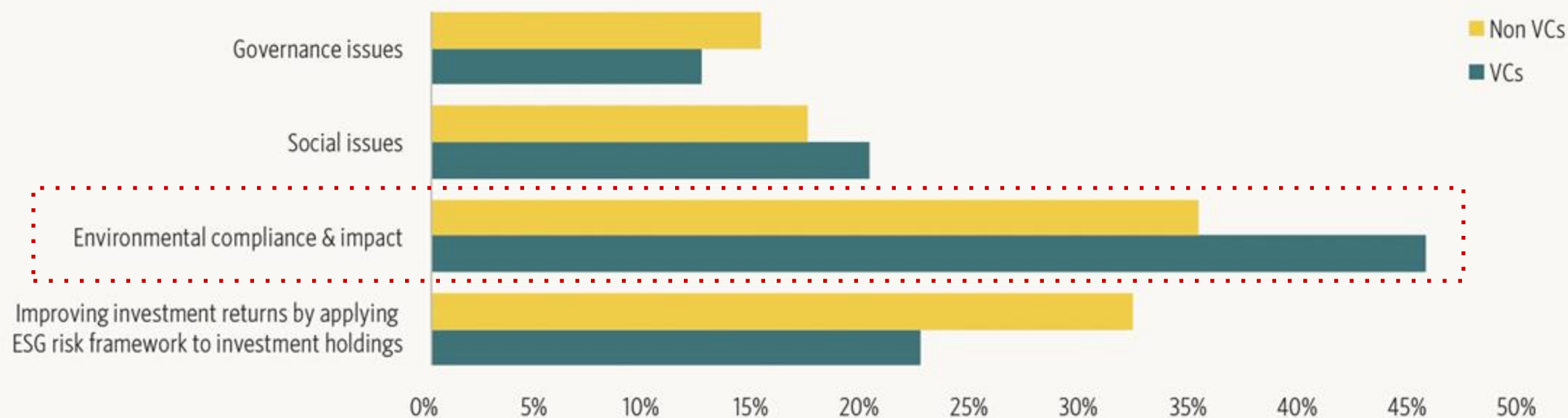


*Total AUM include reported AUM and AUM of new signatories provided in sign-up sheet that signed up by end of March of that year.

Natural Capital falls within Sustainable Investing Focus



On what areas are you most focused currently when it comes to sustainability in an investment context?



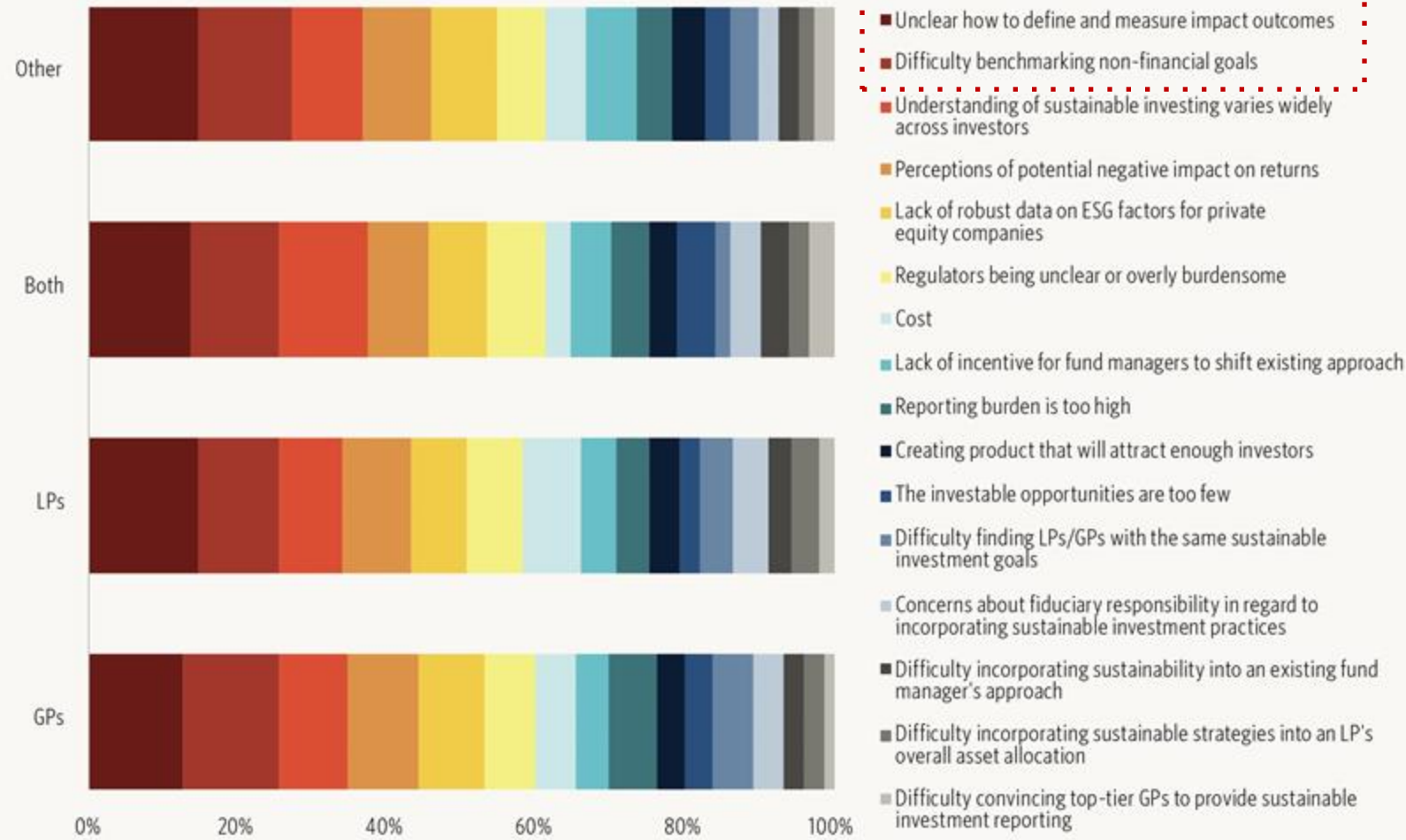
Source: PitchBook | Geography: Global | Respondents: GPs



PitchBook Sustainable Investment Survey 2022. 552 total respondents. Respondent types: Limited Partners (insurance companies, pension funds, endowments, foundations); General Partners (sponsors/managers of private investment funds); Both (Fund of Fund managers/investors); and Other (registered investment advisors, and family offices).

Top Challenges: Measuring and Benchmarking

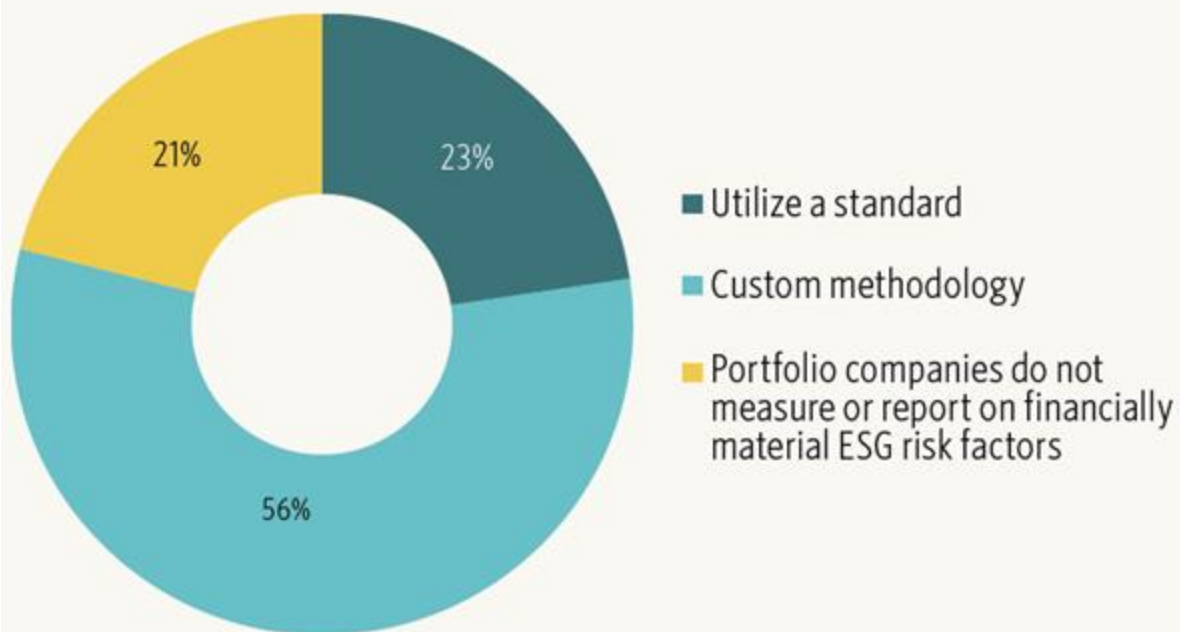
What do you perceive as the top 3 challenges for sustainable investing?



Investors Need Systematic Framework for Measuring and Reporting

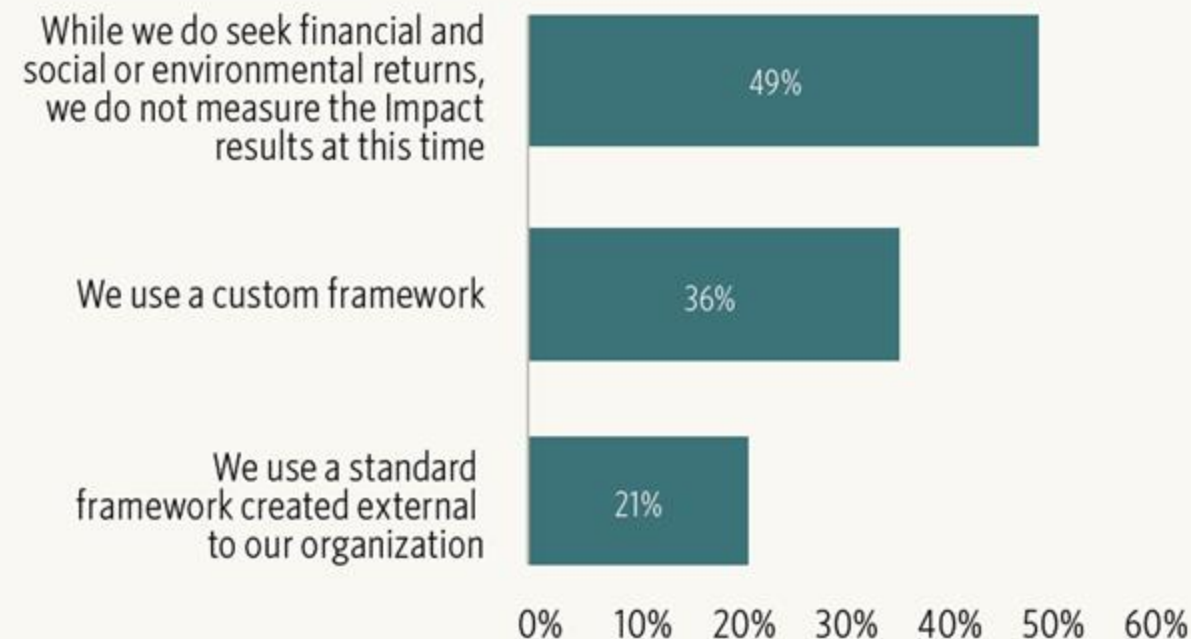


Do your portfolio companies utilize a standard or custom framework to measure and report on their financially material ESG risk factors?



Source: PitchBook | Geography: Global | Respondents: GPs

If you do any Impact investment work, how do you measure Impact?



Source: PitchBook | Geography: Global | Respondents: All

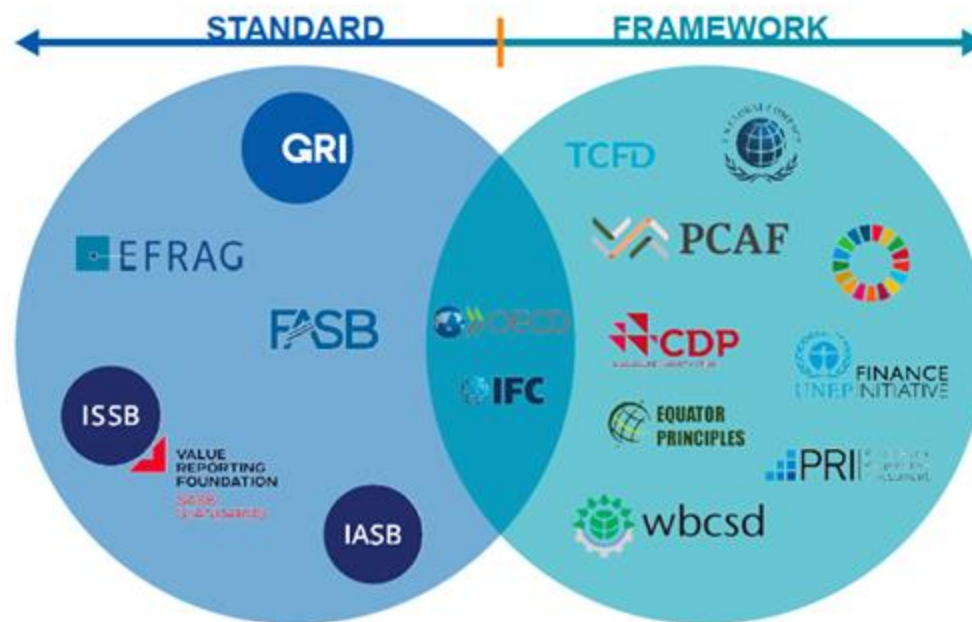


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ESG Data Convergence Project

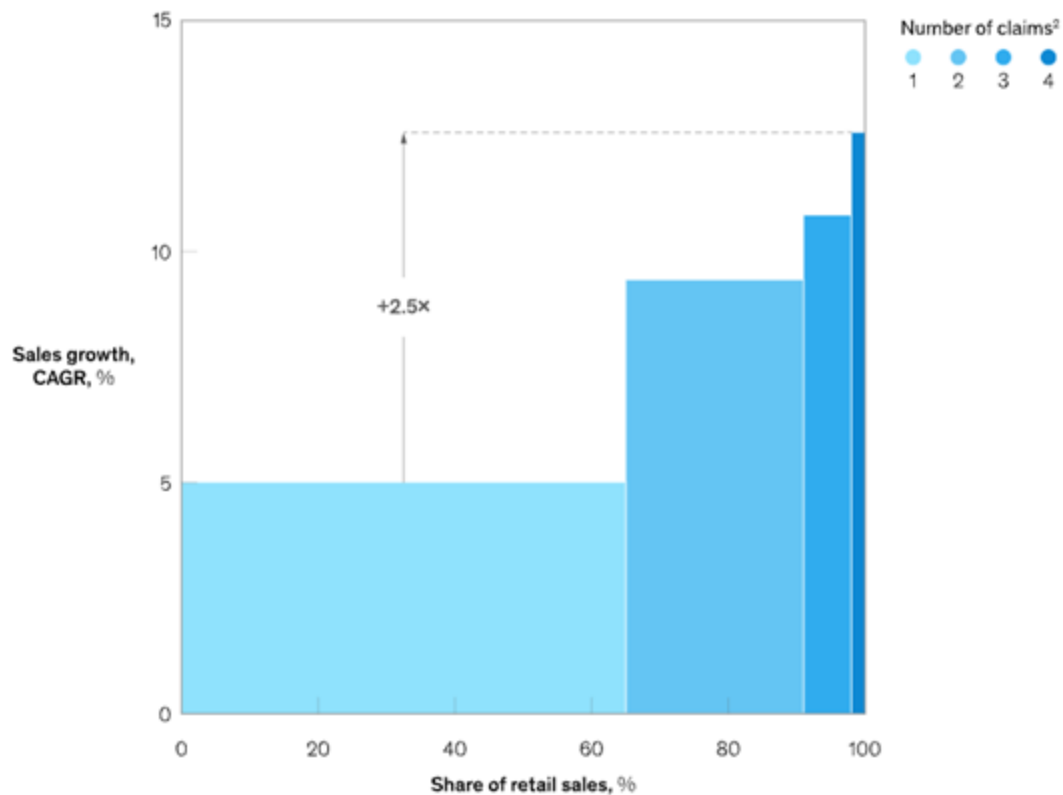


- Sponsored by ILPA
- **Mission:** create a critical mass of meaningful, performance-based, and comparable ESG data from private companies.
- 300+ GPs and LPs representing ~\$26 trillion in assets under management
- **Track agreed-upon metrics for portfolio companies and report them in a standardized format**
- **Standards:** Specific and detailed criteria on what should be reported.
- **Frameworks:** A set of guiding principles to frame, or contextualize, information.
- **Rankings and ratings:** A score of ESG performance based on information that companies disclose using reporting standards or frameworks. It is typically comprised of a quantitative score and a risk category.



What do Customers Want from Companies?

Sales growth vs share of retail sales by number of ESG¹-related claims made by a product, US, 2018–22



¹Environmental, social, and governance.

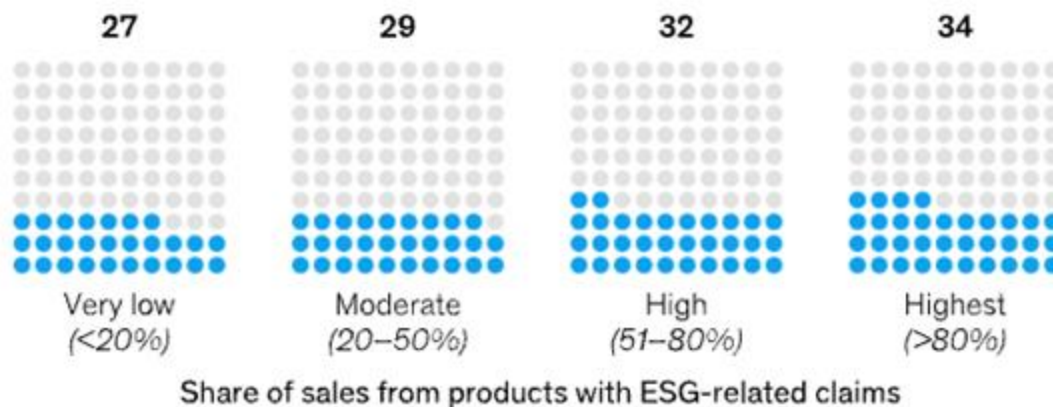
²There are 6 types of claims; scenario types 5 and 6 were not included due to low sample size.

Source: NielsenIQ

Making ESG Claims Can Increase Sales

Brands with more sales from products making environmental, social, and governance-related claims enjoy greater loyalty.

Brand repeat rate by level of sales from products with ESG¹-related claims, US,² %



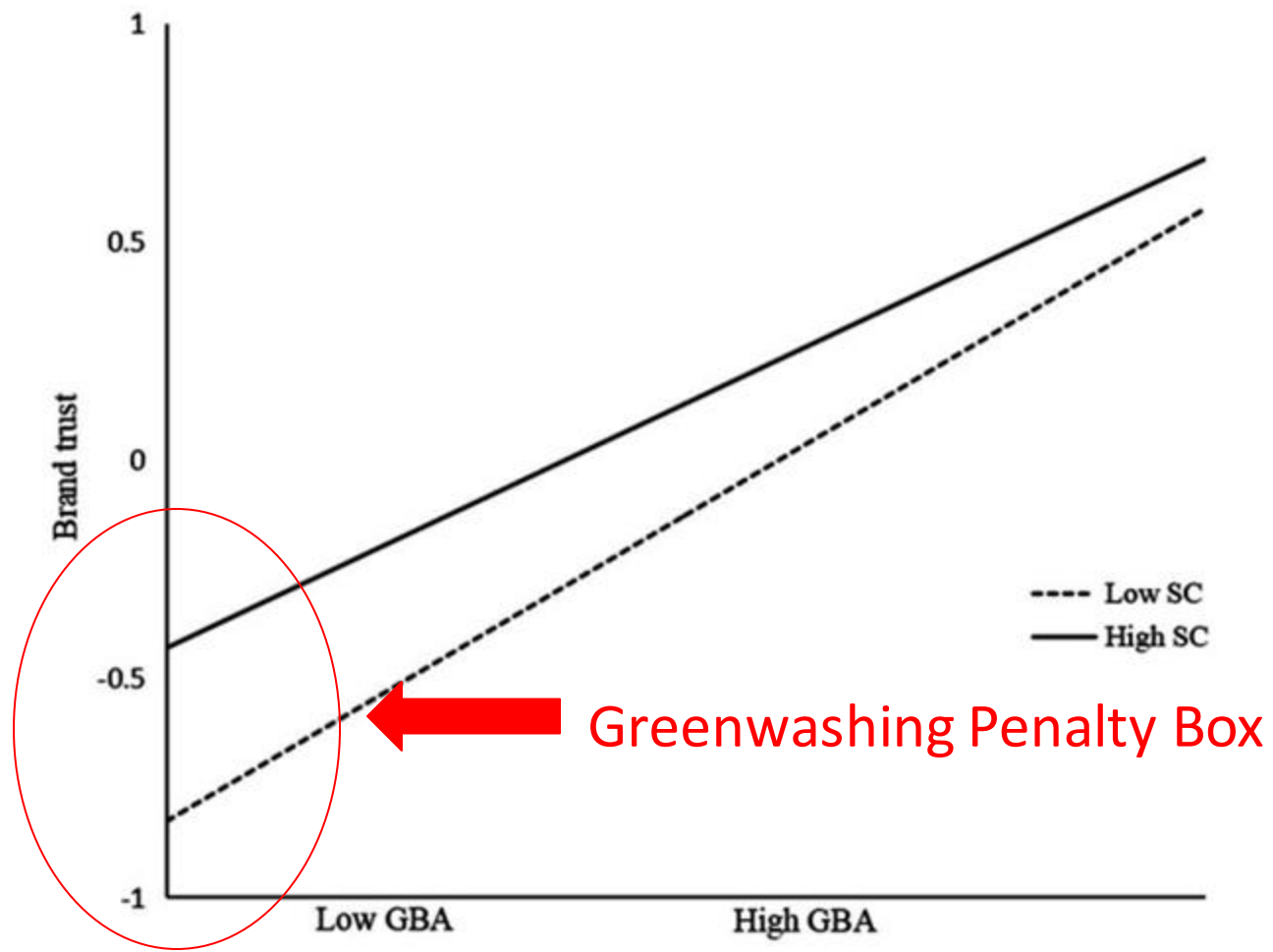
It Also Can
Increase
Customer Loyalty

¹Environmental, social, and governance.

²Share of households buying a product 3 or more times annually.

Source: NielsenIQ consumer panel, comprising 100,000 households, Sept 2020–22

McKinsey & Company



... But
Greenwashing is
Punished by the
Market!

Less Lawyers & PR



More Habitat



**Authenticity is
Simple**

Invite Landowners to and Communities to Participate in Sustainable Resource Development

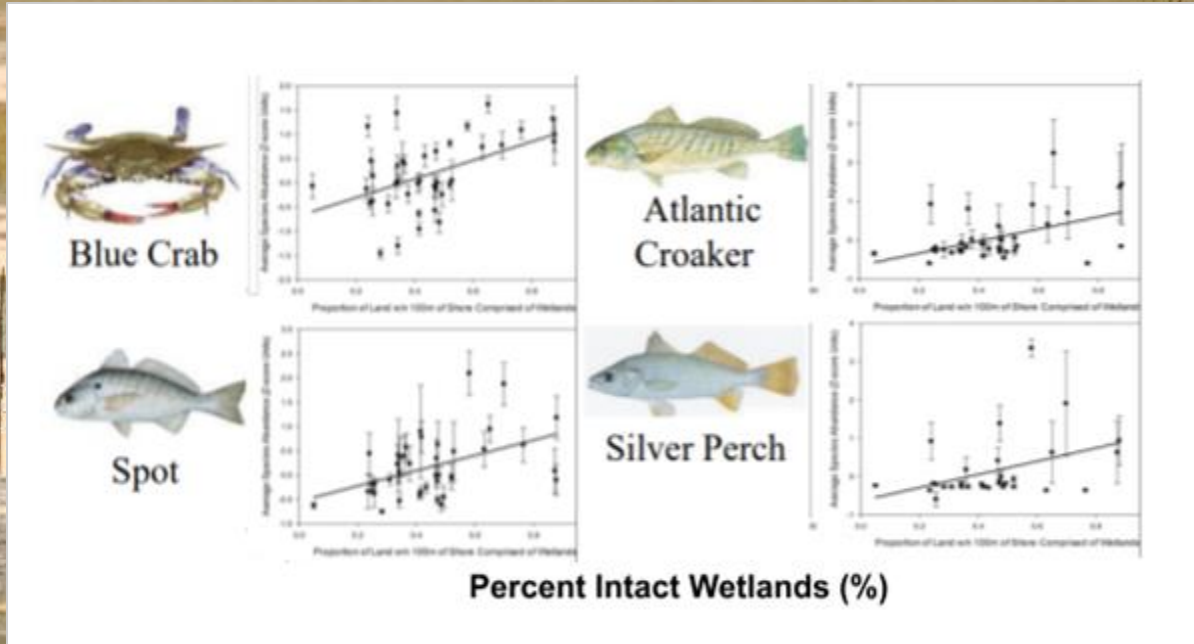


- **Participation Increases Price Points**
The higher a brands Participation Brand Index score, the more consumers are willing to pay for that brand.
- **Participation Improves Return on SG&A**
89% of ads are ignored or blocked, representing over \$500B annually in wasted spend.
- **Participation Drives Equity Returns**
The top quintile in the Iris Participation Brand Index outperform the S&P 500 by 100%.*



People Understand Habitat Value.

Quantify & Tell Your Story



Smithsonian Environmental Research Center (SERC).
(2015). Impacts of Shoreline Hardening and Watershed
Land Use on Nearshore Habitats

Thank You & Questions



Q&A Session

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