

**BEIYI (SHELLY) XU**

---

SELECTED WORKS

BEIYI (SHELLY) XU  
bx2199@columbia.edu  
+1.315.925.8009

## EDUCATION

---

- 07/2021 - 05/2022 **Columbia University | New York, New York**  
*Master of Science in Advanced Architectural Design*
- Coursework:
    - HAWAII'Ō NON-LINEAR*: Canoe, Crater, Ceremony: Architectures for Constant Observation.
    - RESET*: Architecture, Environmental Justice, and a Civilian Climate Corps.
    - Shaping Spaces of Sovereignty*: Design for Decolonial Realities and Visions in Puerto Rico.
- 09/2015 - 12/2020 **Syracuse University | Syracuse, New York**  
*Bachelor of Architecture (Dean's List)*
- Thesis:
    - Revitalize (de)Industrialized Sites*: Dynamically Preserving Historical Heritage, Advisor: Greg Corso, Marcos Parga, Junho Chun
- 01/2018 - 04/2018 **SU Visiting Critic Studio | Syracuse, New York**
- Coursework:
    - WHITEWASH and The Essential Aesthetics of Mass*: Studies on Mykonos Urbanism; New Paradigms of "Second Nature"; Problems of Rendering & Photography.
- 01/2017 - 05/2017 **SU Visiting Critic Studio | Syracuse, New York**
- Coursework:
    - ATRIUM: Experiments Inside Interior Urbanism*: Field Studies in Montreal Urbanism; Montreal City Planning; Atrium Design & Develop.

## PROFESSIONAL EXPERIENCE

---

- 07/2019 - 12/2019 **CallisonRTKL | Architecture Intern | Shanghai, China**  
*Worked closely with the design team on project development, final production and communication with clients.*
- Centralcon Industrial District Mixed, Shenzhen, China; DD
  - CIMC Qianhai Competition, Shenzhen, China; DD-CD
  - Gaotou No.6, Chengdu, China; SD
  - Pengrui Tianyue Plaza, Dongguan, China; SD
  - Shangshi Westin Hotel, Quanzhou, China; SD
- 06/2017 - 09/2017 **ECADI | Architecture Intern | Shanghai, China**  
*Worked collectively with the design team on project development and communication with clients.*
- SFC Renovation, Shanghai, China; SD-DD
- 06/2016 - 09/2016 **Red Star Macalline | Architecture Intern | Shanghai, China**  
*Worked collectively with the design team on project development and communication with clients.*
- Aegean Shopping Mall, Shanghai, China; SD-DD

## SKILLS

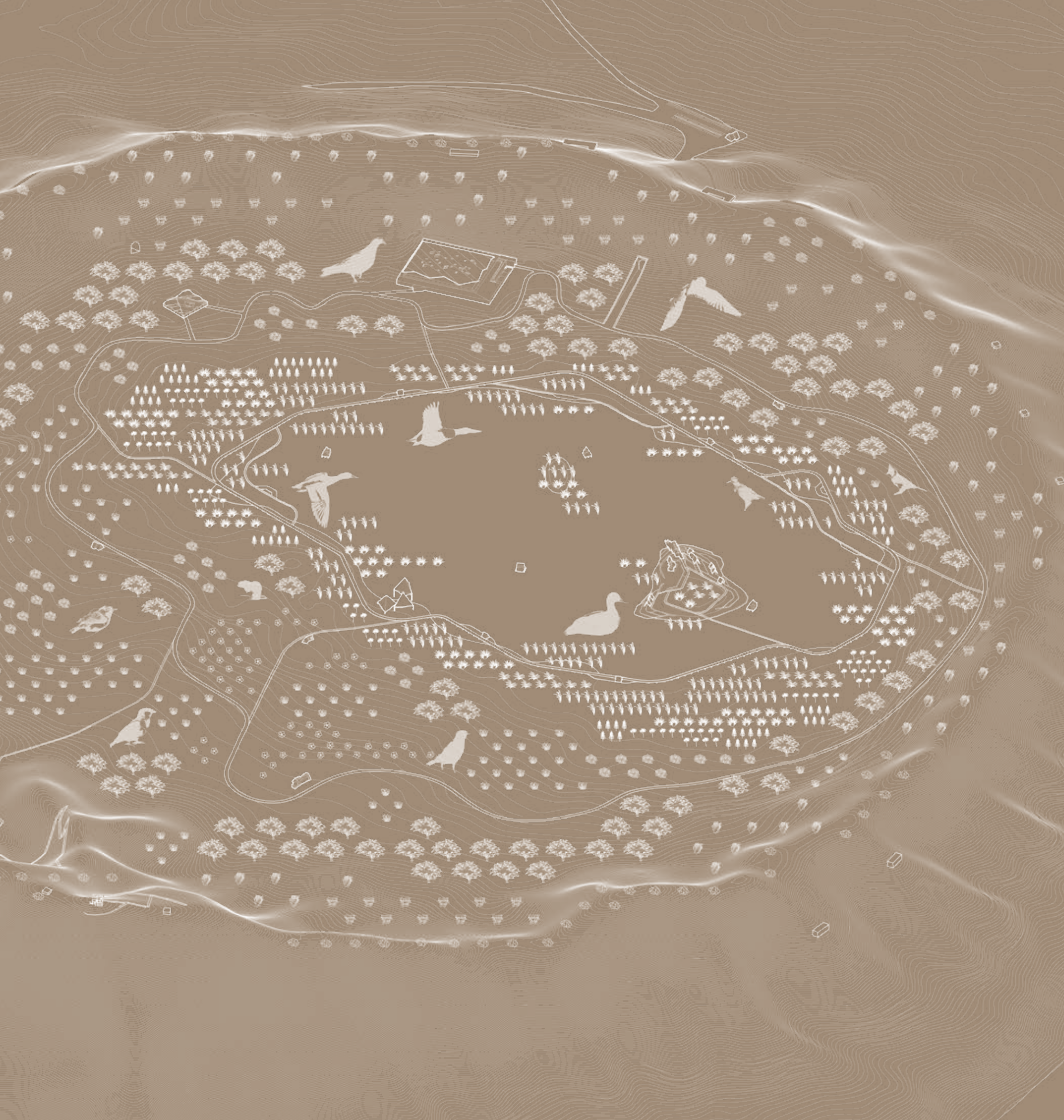
---

- Digital:
  - Rhino 3D, 3ds Max, Revit, SketchUp, Auto CAD, Adobe Creative Suite.
  - V-Ray, Grasshopper, Lumion, DIVA, T-Splines.
  - Visual Studio Code.
- Hands-On:
  - Photography, Hand Sketching.
- Fabrication:
  - Physical Modeling, Laser Cutting, 3D Printing, Woodworking.
- Languages:
  - English, Mandarin.

## CONTENTS

- 01 Re-Wild Le'ahi  
*Wetland Restoration / Decolonization*  
*in collaboration with Brian (Wei-Chun) Chou, Zida Liu*
- 02 Bio-Peatcity  
*Material Exploring / Carbon Sink*  
*Independent Work*
- 03 Legacy of Care  
*Healing Campus / Spine of Care*  
*in collaboration with Can Yang*





## Re-Wild Le'ahi

*Wetland Restoration / Decolonization*

*Academic Work  
in collaboration with Brian(Wei-Chun) Chou, Zida Liu*

*Advisory Professor: Dominic Leong, Sean Connelly*

Honolulu, Hawaii

This project radically re-imagines the future for architecture in Hawai'i, the most remote island in the world on the frontier of the COVID and climate crisis. It explores a trans-scalar and trans-temporal approach to understand an indigenous concept of ground ('aina) as the basis to interrupt existing US urbanism through a network of pedagogical sites (halau) for indigenous knowledge ('ike) at an architectural scale.

The organizing conceptual framework of the project aims to empower indigenous Hawaiian knowledge and the local ecologies of guardianship (ahupua'a) in a way that Mary Pukui described as "*utilizing the resources of sustenance to a maximum.*" Following an intensive agenda focused on Hawaiian culture, social justice issues, and indigenous knowledge, the project designs a "living memorial" operating among a constellation of pedagogical sites, or "academies for ahupua'a recovery"





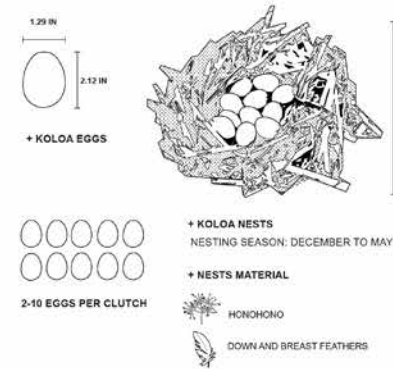
The Diamond Head crater sits at the point of entanglement between four major actors: tourism, colonialism, community, and indigeneity. Colonialism represents the military and industrialists who transformed the crater permanently, as well as the invasive species brought to Hawaii by colonialists for either agricultural or aesthetic reasons. Indigenous culture, architecture, and species make up the indigeneity of the crater, which is constantly threatened by colonialism. Community was born from the compromise between indigeneity and colonization, but the expansion of community and rapid urbanization brings problems itself and results in social inequality and houselessness. The Sprawling community besieged the crater but never fully took over. Colonialist military forces occupied Diamond Head, pursuing control and accidentally preserved a certain degree of indigeneity in the crater. Tourism was officially introduced into the crater in 1962 as Diamond Head turned into a national monument and park, bringing in developers trying to privatize and commercialize the crater and the space around it. Whether gaining or losing predominance, these four actors still remain active and confront each other at multiple nodes in the crater. These confrontations are often aggravated by spatial overlap. This project is about deciphering these nodes of controversy in order to reconcile these confrontations in the future.



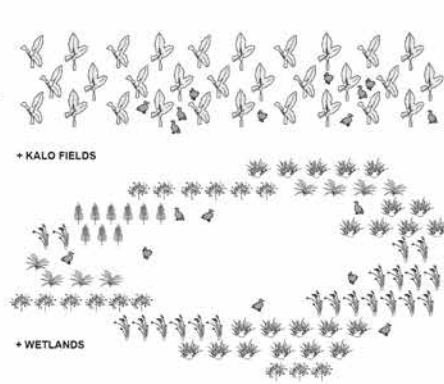
# KOLOA OBSERVATION

[1] Molszewski, C. P., & Dugger, B. D. (2018). Hawaiian duck behavioral patterns in seasonal wetlands and CULTIVATED TARO. The Journal of Wildlife Management, 82(4), 640-649. https://doi.org/10.1002/jwmg.21429  
 [2] Sweborg, G. E. (1987). The Koloa, a preliminary report on the life history and status of the Hawaiian Duck (Anas wyvilliana). prepared as part of The Koloa restoration project. Division of Fish and Game.  
 [3] Green, N. M. (2005). Ethnoecology of taro farmers and their management of Hawaiian wetlands and endangered Waterbirds in taro agroecosystems.

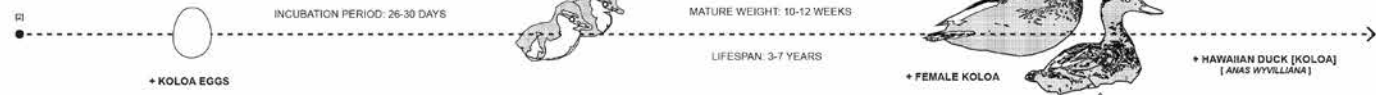
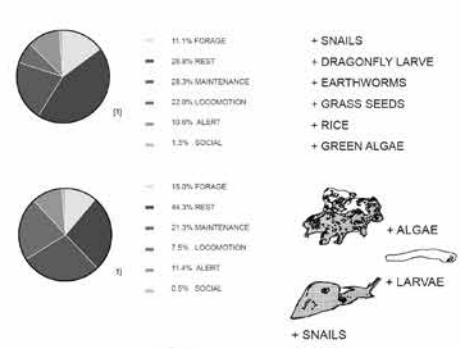
## NESTING PATTERN [1]



## HABITATS [1] [3]



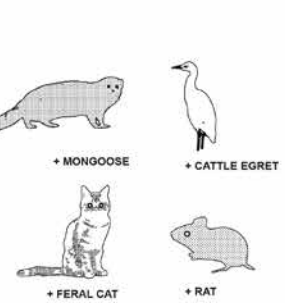
## FOOD [2]



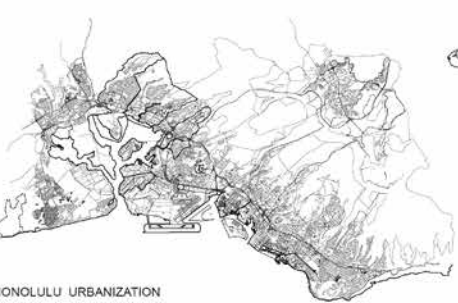
## DISEASE [3]

- PARASITE**
- + LOUSE
  - + TAPEWORM
- BACTERIA**
- + BOTULISM
  - + AVIAN INFLUENZA
  - + AVIAN MALARIA
  - + CHOLERA
  - + DUCK PLAGUE
  - + RIEMERELLA ANATIPESTIFER

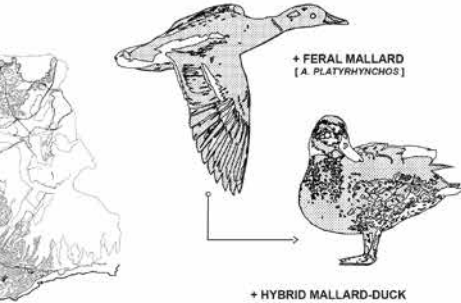
## PREDEATORS (DUCKLINGS) [3]



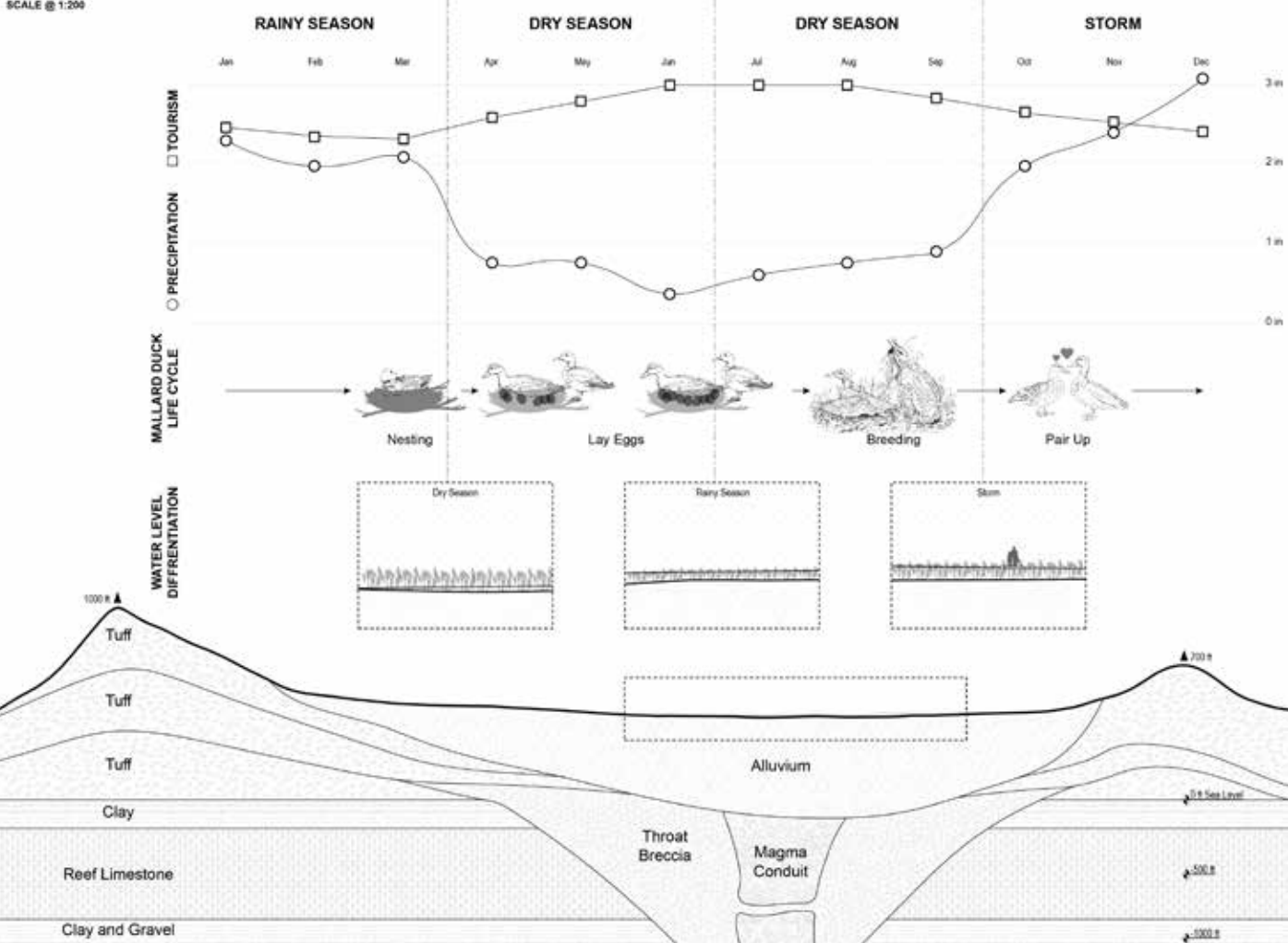
## HABITAT LOSS [3]



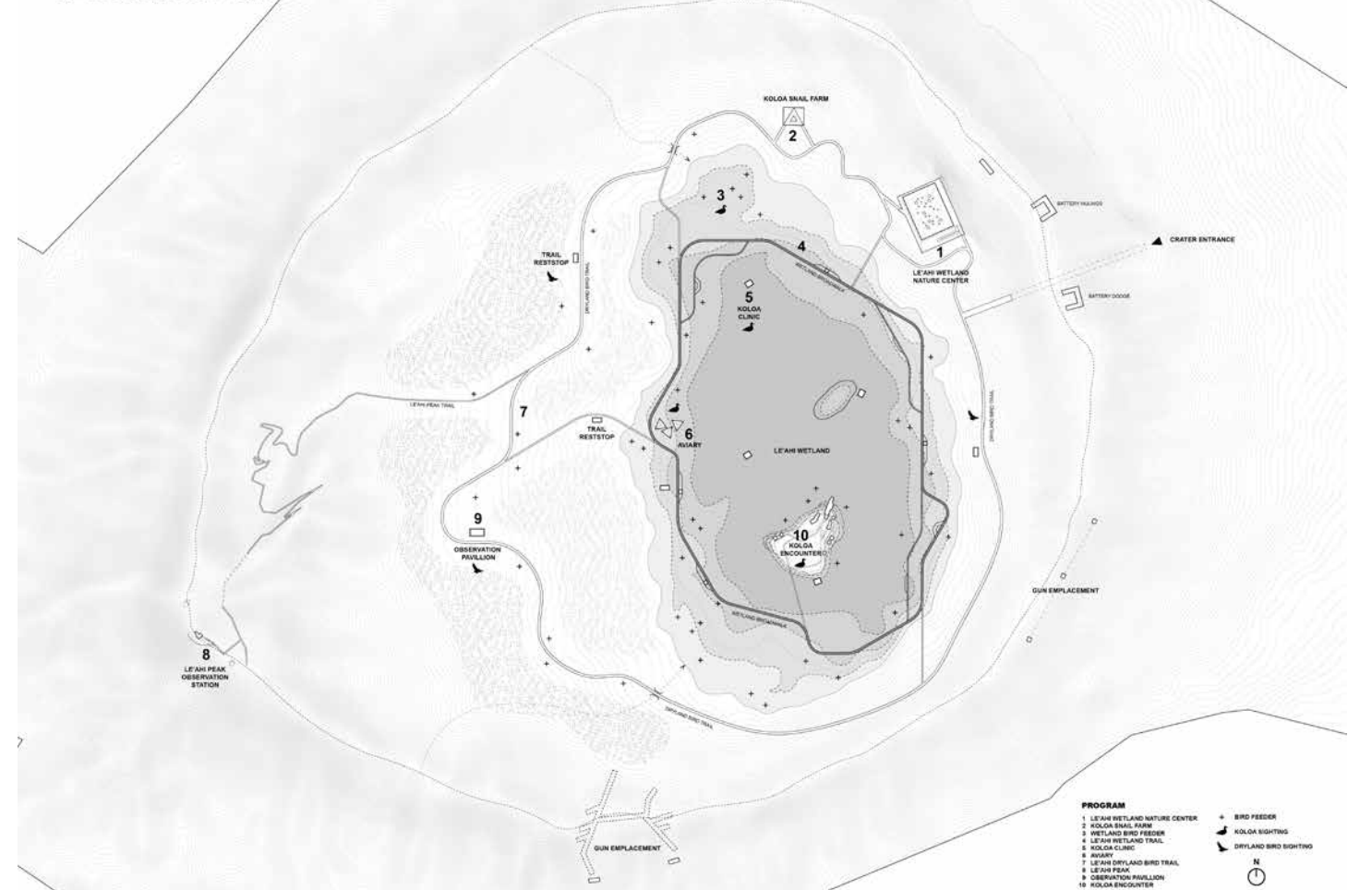
## HYBRIDIZATION [3]



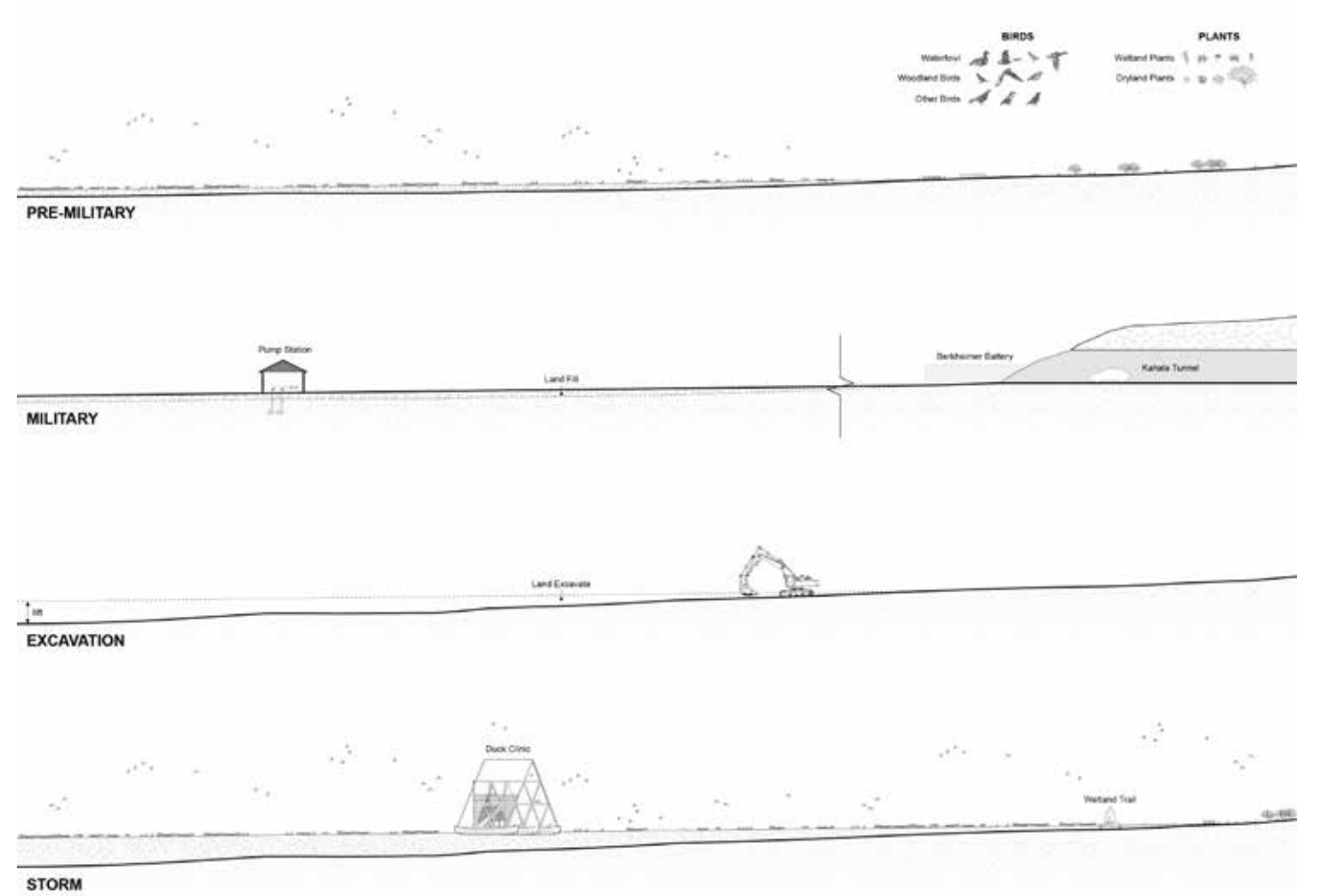
## LE'AHU SITE SECTION



# LE'AHU WETLAND RESTORATION PLAN

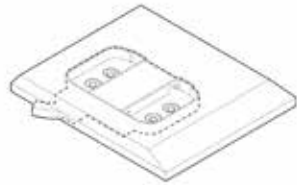


## LE'AHU ECOSYSTEM TRANSFORMATION





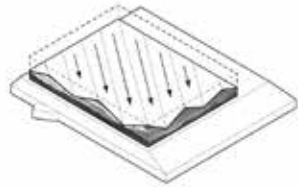
LE'AH WETLAND NATURE CENTER



EXISTING MILITARY STRUCTURE: BATTERY BIRKHIMER



NEW PROGRAM OVERLAYS BUNKER

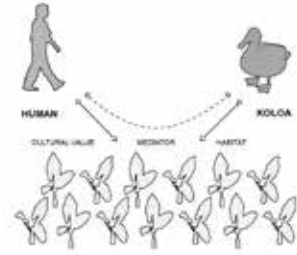


PITCHED ROOF ACCENTUATE VIEW OF THE LE'AH PEAK

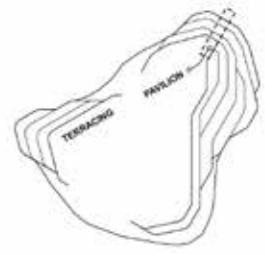


OPEN STRUCTURE CONNECTS BUILDING TO ENVIRONMENT

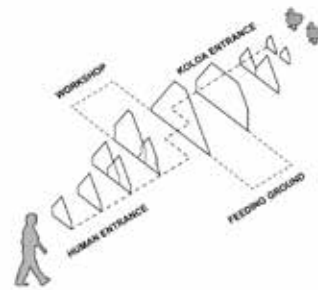
KOLOA PAVILION



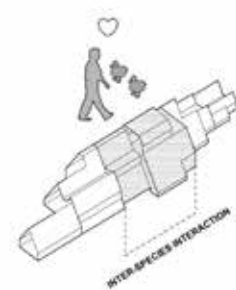
AGROECOSYSTEM



EXCAVATION FILL ISLAND

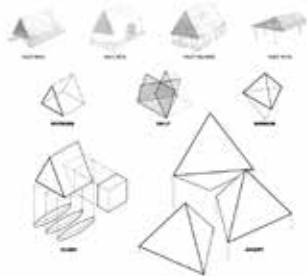


DUCK CURING



DUCK RECOVERY

KOLOA CLINIC



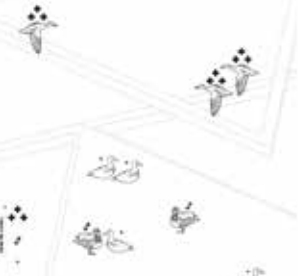
TRIANGULAR SHAPE EXTRACTION



SPATIAL | MATERIAL

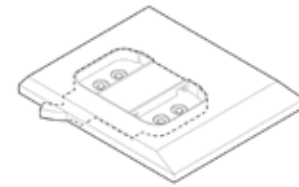


DUCK CURING



DUCK RECOVERY

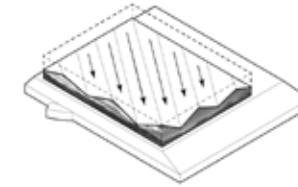
LE'AH WETLAND NATURE CENTER



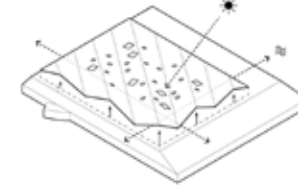
EXISTING MILITARY STRUCTURE: BATTERY BIRKHIMER



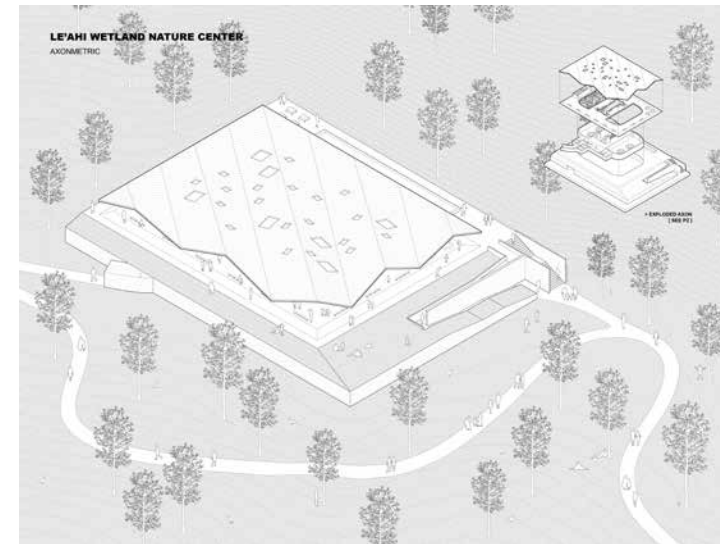
NEW PROGRAM OVERLAYS BUNKER



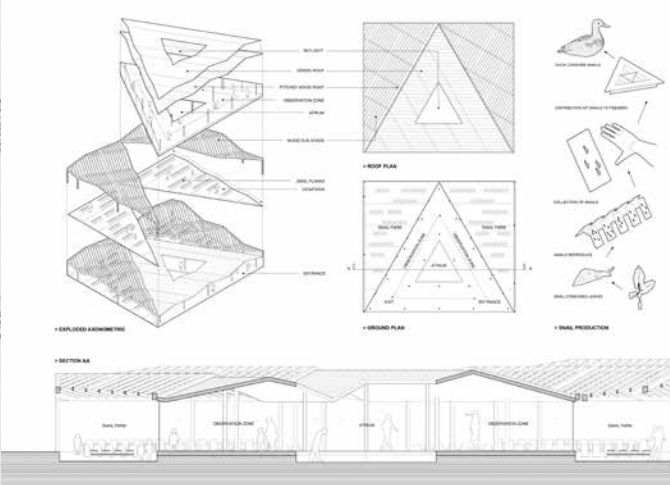
PITCHED ROOF ACCENTUATE VIEW OF THE LE'AH PEAK



OPEN STRUCTURE CONNECTS BUILDING TO ENVIRONMENT

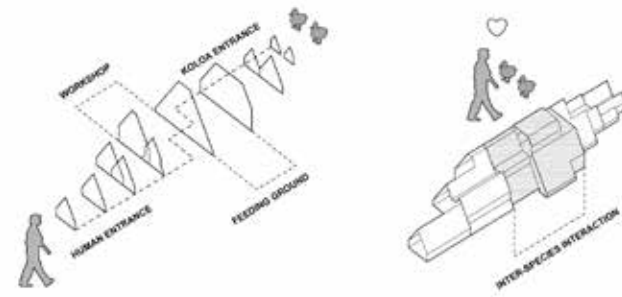
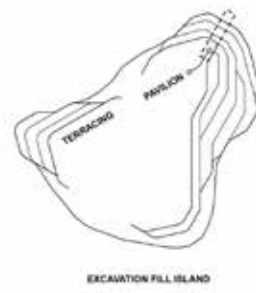
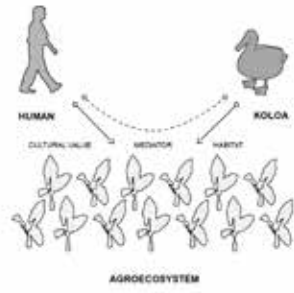


LE'AH KOLOA SNAIL FARM

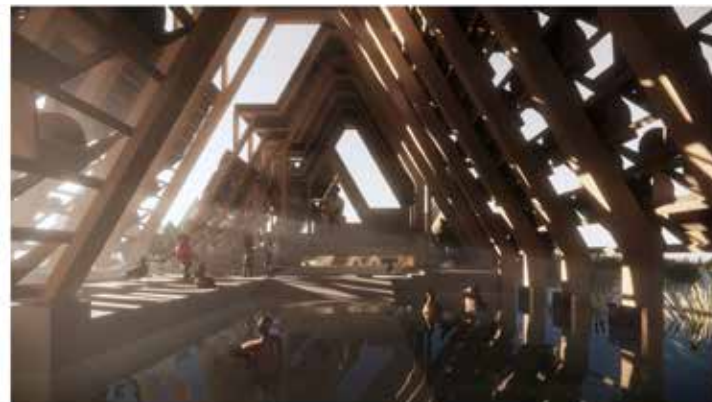
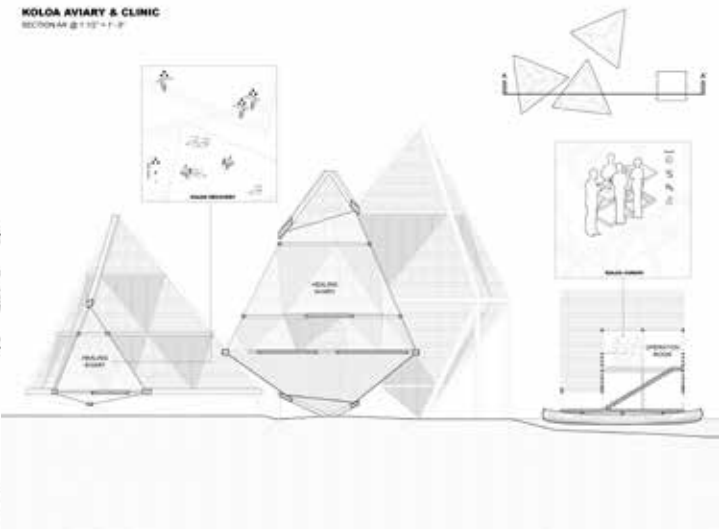
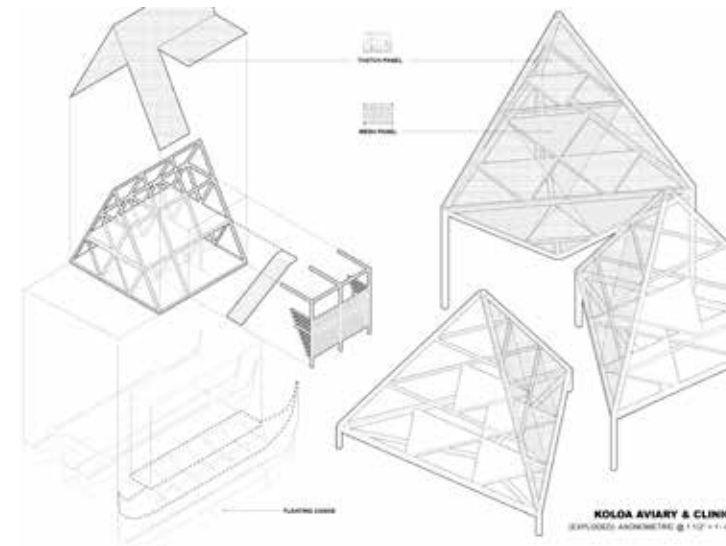
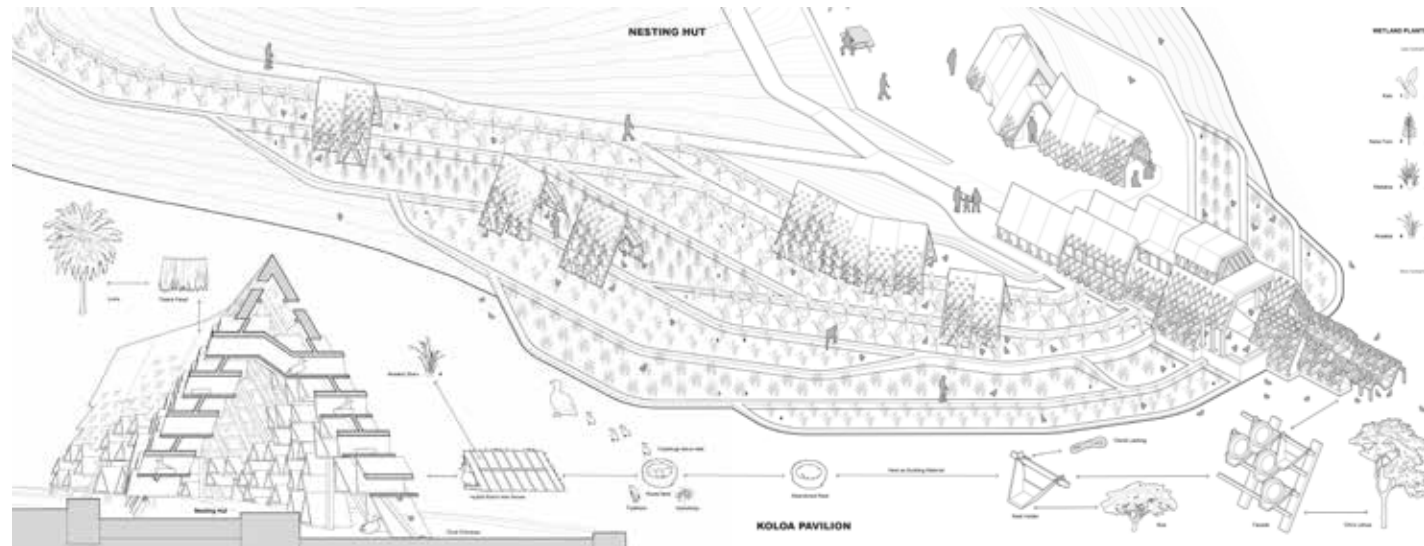
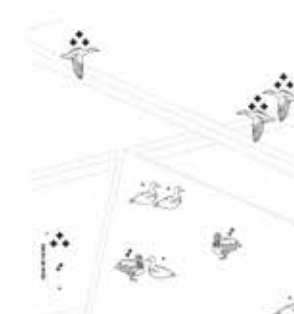
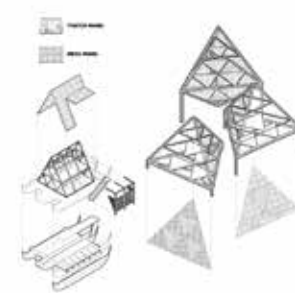
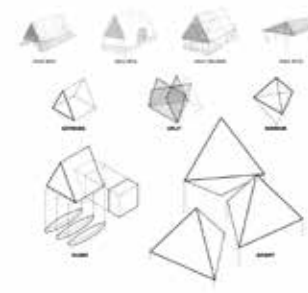




KOLOA PAVILION



KOLOA CLINIC







## Bio-Peatcity

*Material Exploring / Carbon Sink*

*Academic Work  
Independent Work*

*Advisory Professor: David Benjamin*

Lairg, United Kingdom

In the past year and a half, the entangled crises of a global pandemic, climate change, racial injustice, and income inequality have demonstrated that current systems fail to adequately address the challenges of these times.

This project explored these entanglements and intersections through radical imagination and scalable impact. It looked for opportunities like the unprecedented \$3.5 trillion infrastructure plan currently being debated in the United States and the historic United Nations *Climate Change Conference (COP26)*. It developed strategies such as materials that act as a carbon sink, buildings that are open systems, and an empowered workforce through a Civilian Climate Corps. This project sought to prototype the buildings and cities of the future.





Time-consuming though it might be, restoring peatland and creating a synthetic bio-peatcity that goes in parallel with the urban development could absorb twice the amount of carbon dioxide as all forests across the planet could take in.

The bio-peatcity provides a long-term measurement for solving GHGs and providing sufficient green jobs for society. As it absorbs and stores a gradually increasing amount of carbon throughout the millennium, with a growth rate of 10% per decade.

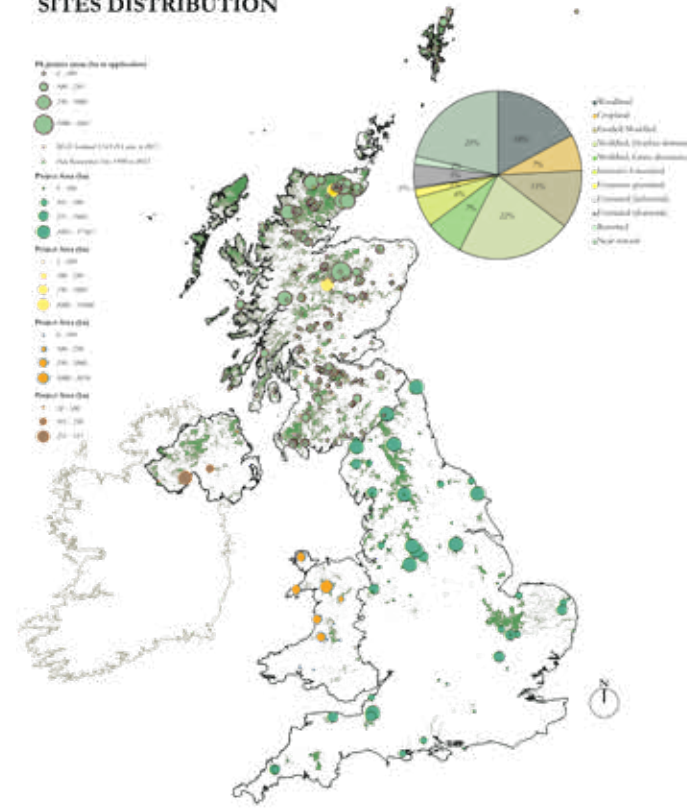
A network of civilian climate corporation across UK would be establish, providing governmental "green jobs" that requires people like "peat-biologist" to restore and maintain the waterlogged, acidic, low-nutrient ecosystems within the peatland.



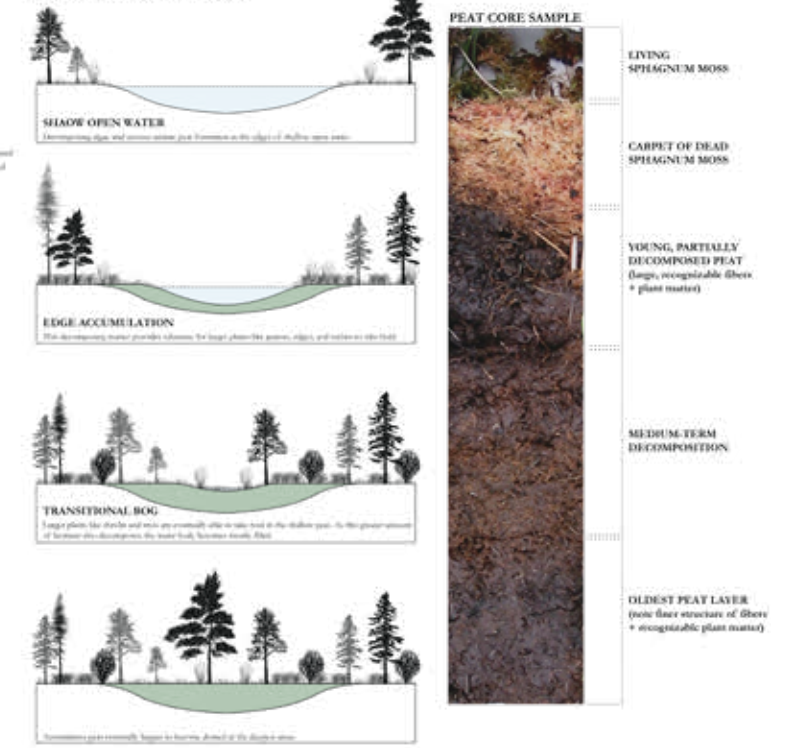
### GLOBAL PEAT DISTRIBUTION



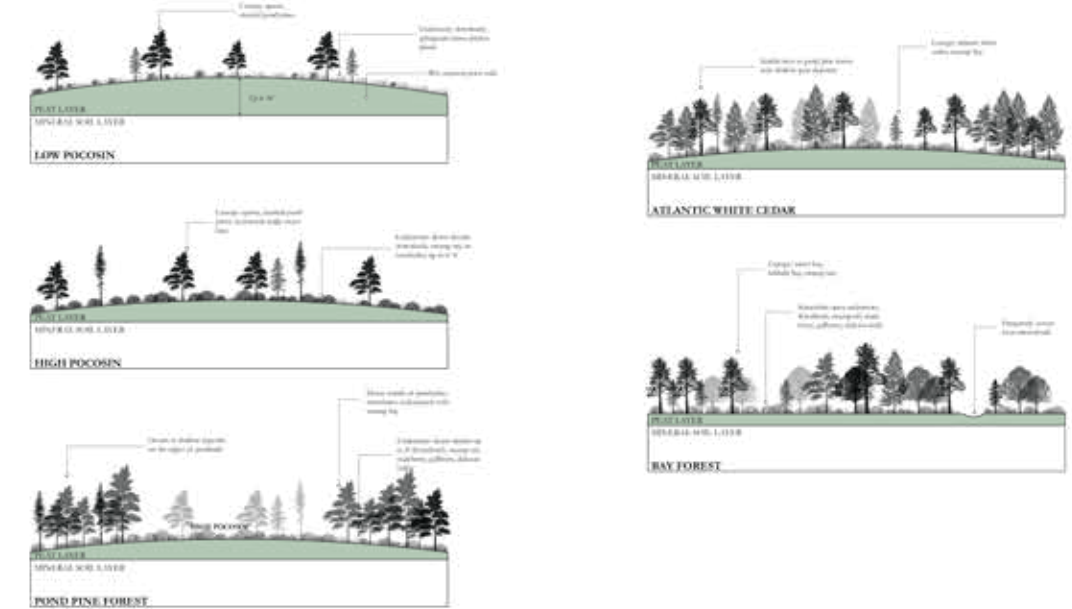
### UK PEATLAND & RESTORATION SITES DISTRIBUTION



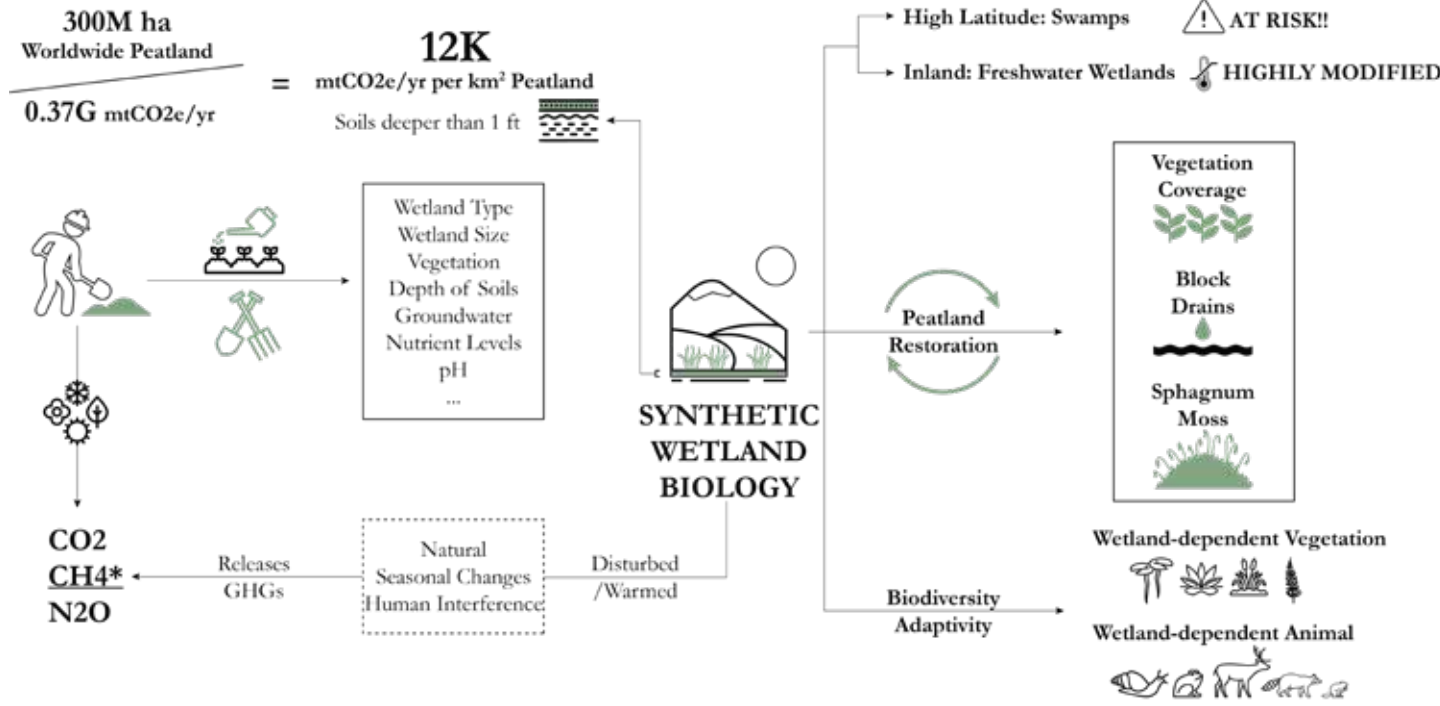
### PEAT FORMATION



### PEATLAND PLANT COMMUNITIES



### PEATLAND DRAINAGE





# RESTORATION AND DESIGN STRATEGIES

## BIODIVERSITY + HABITAT

- INTRODUCE TARGET SPECIES
  - SUPPORT NATURAL MIGRATION
  - CONNECT HABITATS
  - SPREAD MOWN MATERIAL
  - SPREAD SEEDS
  - PLANT NATIVE SPECIES
  - TRANSPLANT SOD
- IMPROVE HABITAT CONDITIONS
  - REGULATE NUTRIENT AVAILABILITY
  - REGULATE SATURATION
  - CREATE NICHEs
  - REFRESH GENETIC MATERIAL
  - REDUCE INVASIVE + COMPETITORS
  - CREATE SMALL POOLS
  - PROVIDE NEST BOXES + ARTIFICIAL HABITAT
  - CREATE SHELTER WITH NURSE SPECIES
- REDUCE HUMAN IMPACT
  - ENCOURAGE ACCESS TO LESS VULNERABLE AREAS
  - OFFER ATTRACTIONS
    - PATHS
    - BOARDWALKS
    - SHELTER
    - MAPS
    - SIGNAGE
    - OBSERVATION PLATFORMS
    - TOURS
  - TARGETED EDUCATION
  - REGULATE ACCESS BY ZONING
  - REDUCE ACCESS TO VULNERABLE AREAS

## IMPROVE HYDROLOGY

- ELEVATE WATER LEVEL
  - MANAGE EXISTING DRAINAGE SYSTEMS
    - INCREASE WATER BACKUP HEIGHTS
    - REMOVE SUBSURFACE DRAINAGE PIPES
  - INCREASE NATURAL RE-WETTING
    - DAM DITCHES
    - INFILL DITCHES
    - ESTABLISH RESERVOIRS
    - INTRODUCE SURPLUS WATER
    - IMPROVE WATER DISCHARGE
    - REDUCE EVAPOTRANSPIRATION
    - RAISE CATCHMENT WATER TABLE
    - SLOW DOWN WATER FLOW
    - INTRODUCE BARRIERS (IF APPROPRIATE)
    - INTRODUCE TREES, ROCKS, OTHER OBSTRUCTIONS
- REDUCE EVAPOTRANSPIRATION
  - TARGETED REMOVAL OF TREES
  - PLANT SPECIES WITH SLOWER EVAPOTRANSPIRATION RATES
  - IMPROVE MICROCLIMATE
    - WIND BREAKS (IF APPROPRIATE)
- RAISE CATCHMENT AREA WATER TABLE
  - DECREASE GROUNDWATER EXTRACTION
    - LIMIT AGRICULTURAL IRRIGATION
  - INCREASE INFILTRATION
    - REDUCE DRAINAGE
  - SLOW DOWN SURFACE RUNOFF
    - ALTER FOREST COMPOSITION
- IMPROVE WATER QUALITY
  - REDUCE IMPACT FROM AGRICULTURE
  - FILTER SEDIMENTS
  - REROUTE POLLUTED WATER
  - REDUCE EROSION

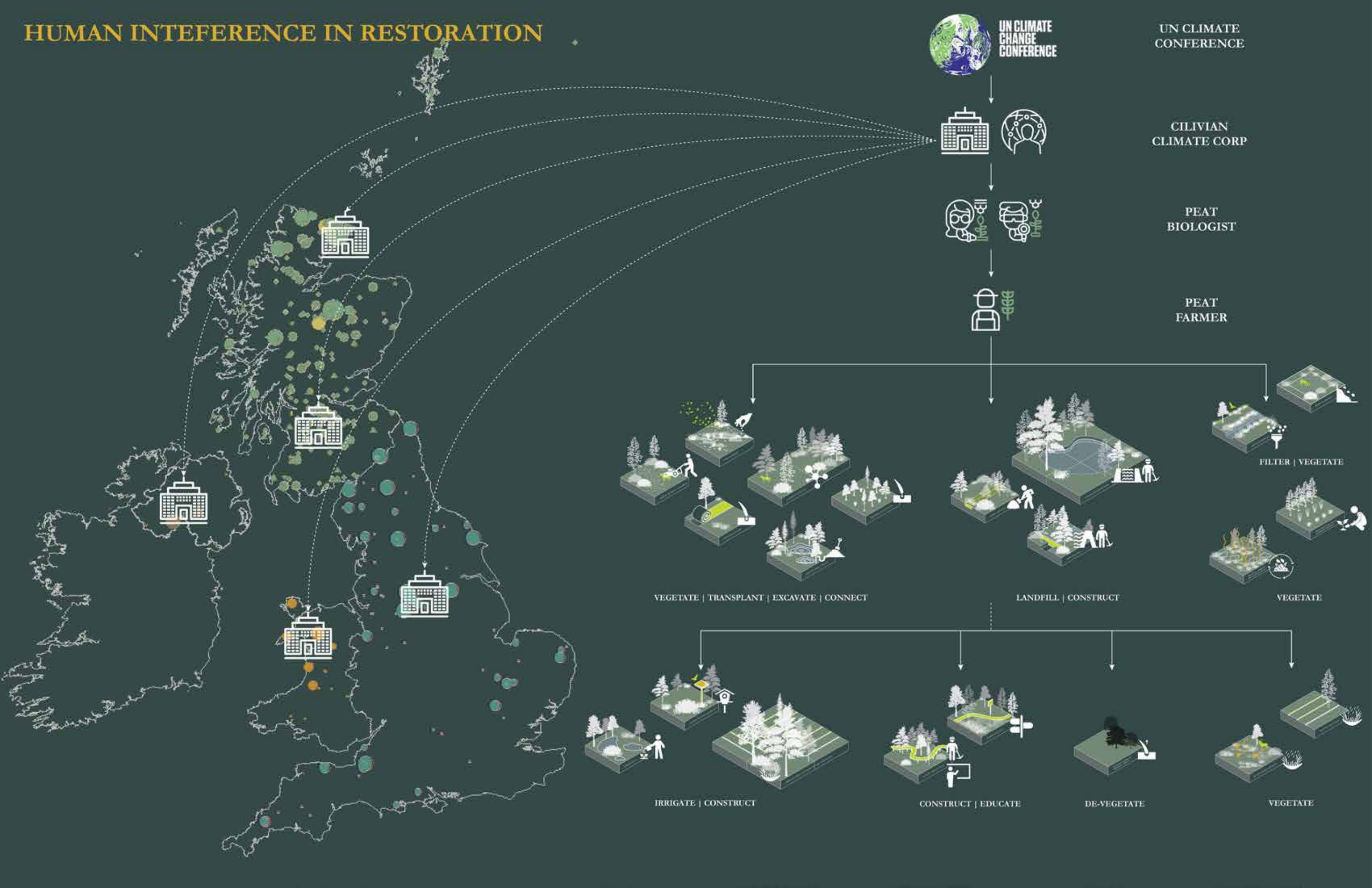
## REDUCE GREENHOUSE GAS EMISSIONS

- REACTIVATE PEAT FORMATION
  - REDUCE AEROBIC DECOMPOSITION
    - ELEVATE WATER LEVELS
    - REDUCE EVAPOTRANSPIRATION
  - SUPPORT EXISTING PEAT-FORMING SPECIES
  - REINTRODUCE PEAT-FORMING SPECIES
    - RAISE CATCHMENT WATER TABLE
    - ERADICATE DEEP-ROOTED PLANTS
- REACTIVATE PEAT FORMATION
  - REDUCE DAMAGE TO VEGETATION + PEAT SURFACE
  - STABILIZE BARE PEAT SURFACE
    - RE-VEGETATE
  - IMPROVE CATCHMENT HYDROLOGY
- REDUCE NOXIOUS SUBSTANCES
  - HARVEST AND REMOVE BIOMASS
  - STIMULATE CHEMICAL PRECIPITATION
  - REMOVE DEGRADED SURFACE LAYERS
    - TRANSPLANT SOD
- PREVENT (EXPANSION OF) FIRE
  - LIMIT ACCESS IN FIRE-SENSITIVE AREAS
  - LIMIT ACCESS IF HEIGHTENED FIRE RISK
  - PROVIDE FIRE SAFETY MAPS
  - ESTABLISH FIRE PATROL SYSTEM
  - MAINTAIN FIRE BREAKS
  - PROVIDE WATER FOR FIREFIGHTING
  - REWET PEAT SURFACE
  - DEVELOP FIRE RISK MODEL





# HUMAN INTEFERENCE IN RESTORATION







## Legacy of Care

*Healing Campus / Spine of Care*

*Academic Work  
in collaboration with Can Yang*

*Advisory Professor: Justin G. Moore, Oscar Oliver-Didier  
with Andrew J. Padilla*

*Vieques, Puerto Rico*

Places and communities that have not been fully valued still deserve our care and good design. The objective of this project will be to identify and further shape spaces of sovereignty and self-determination in the context of Puerto Rico's perennial and extreme conditions of contingency and coloniality.

Some of the questions to be answered in this project include:

- How to strategically adapt existing plant frame with medical-grade requirement of fresh air, sunlight, and energy-efficiency installations like water collecting system and rooftop solar panel?
- For the proposed healing garden landscape, what indigenous vegetation and/or farming plantation could serve the purpose of bioremediation?
- What scale of design resolution is needed considering the almost urban-scaled site to make a convincing case for the care of everyday activities?

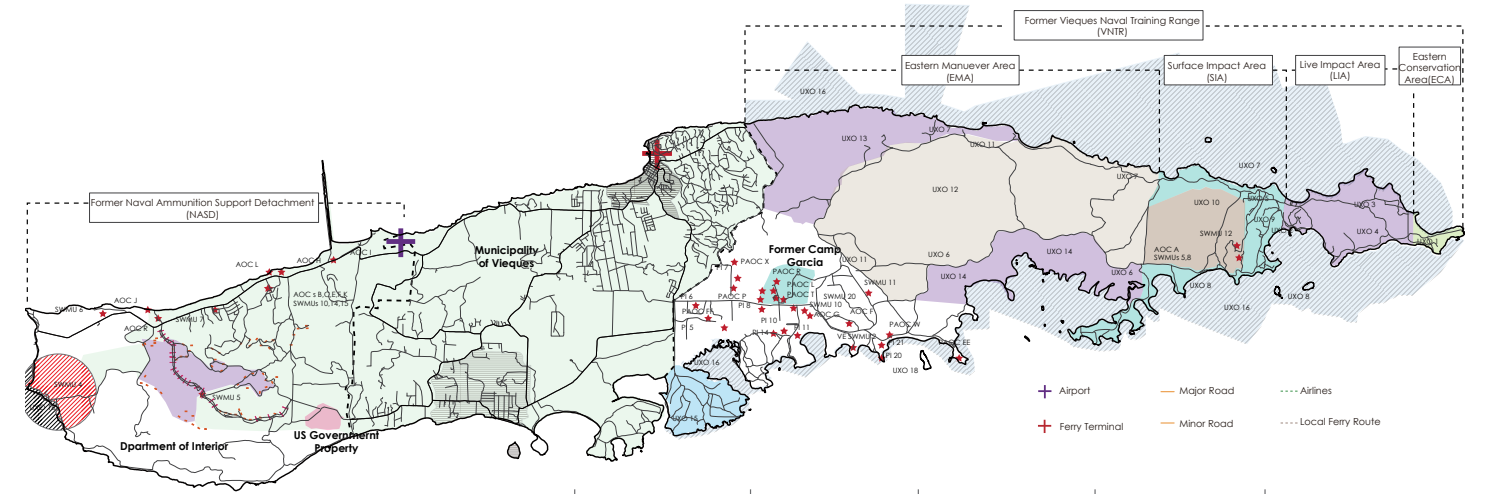
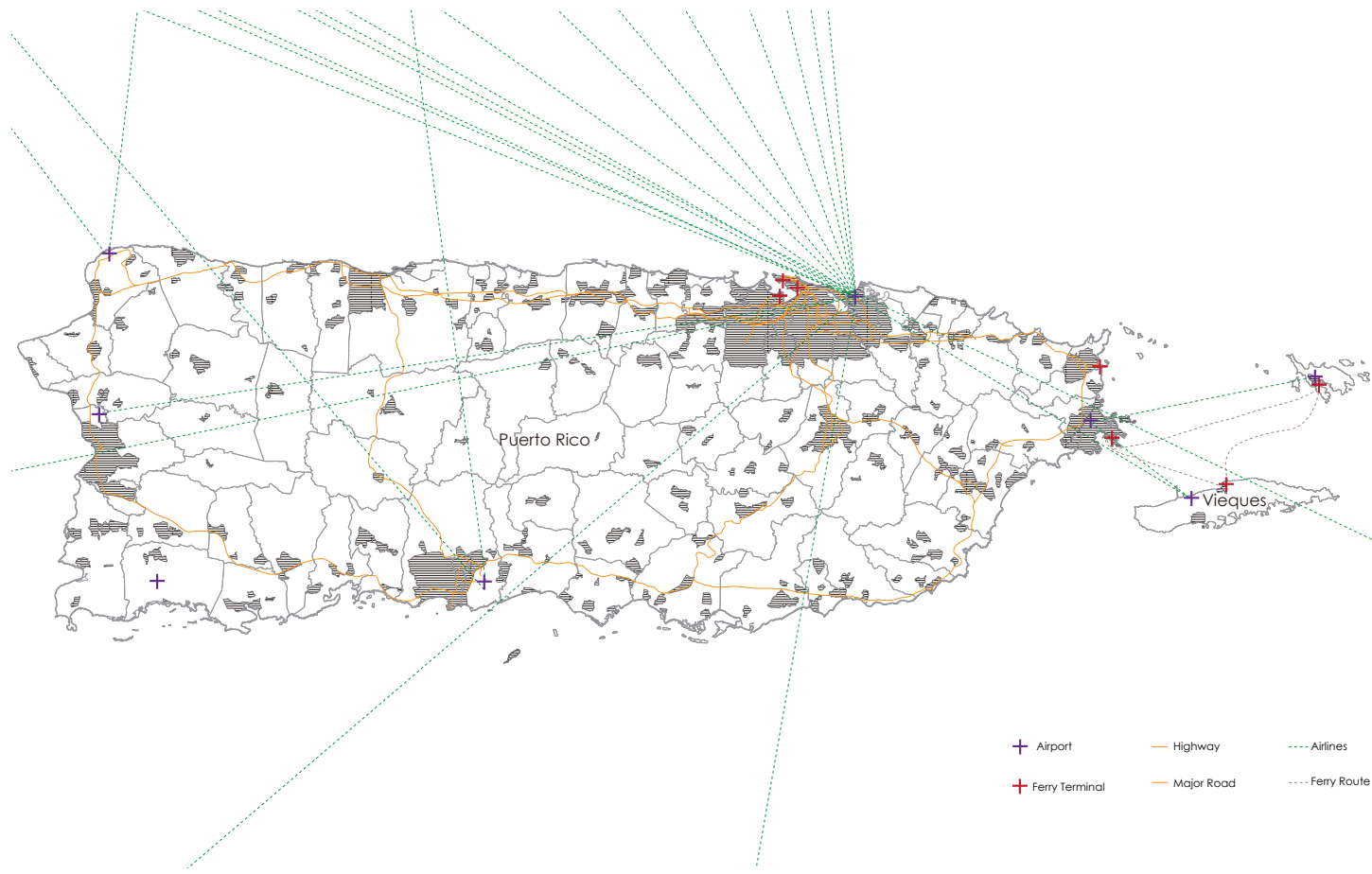




The project mission is to provide essential healing and care on a daily-life basis for both locals and tourists in Vieques, by renovating the abandoned site of former camp into a healthcare compound, which helps improve local health rate and facilitates self-sufficiency on Vieques, while symbolizing an empowered healing gesture of decolonization.

The project vision is transforming abandoned military camp into a caring & healing compound that solve the caring needs in all sorts of dimension for both locals and tourists while boosting long-term engagement of retrieving former military land on Vieques.





Solid Waste Management Unit = SWMU

Area of Concern = AOC

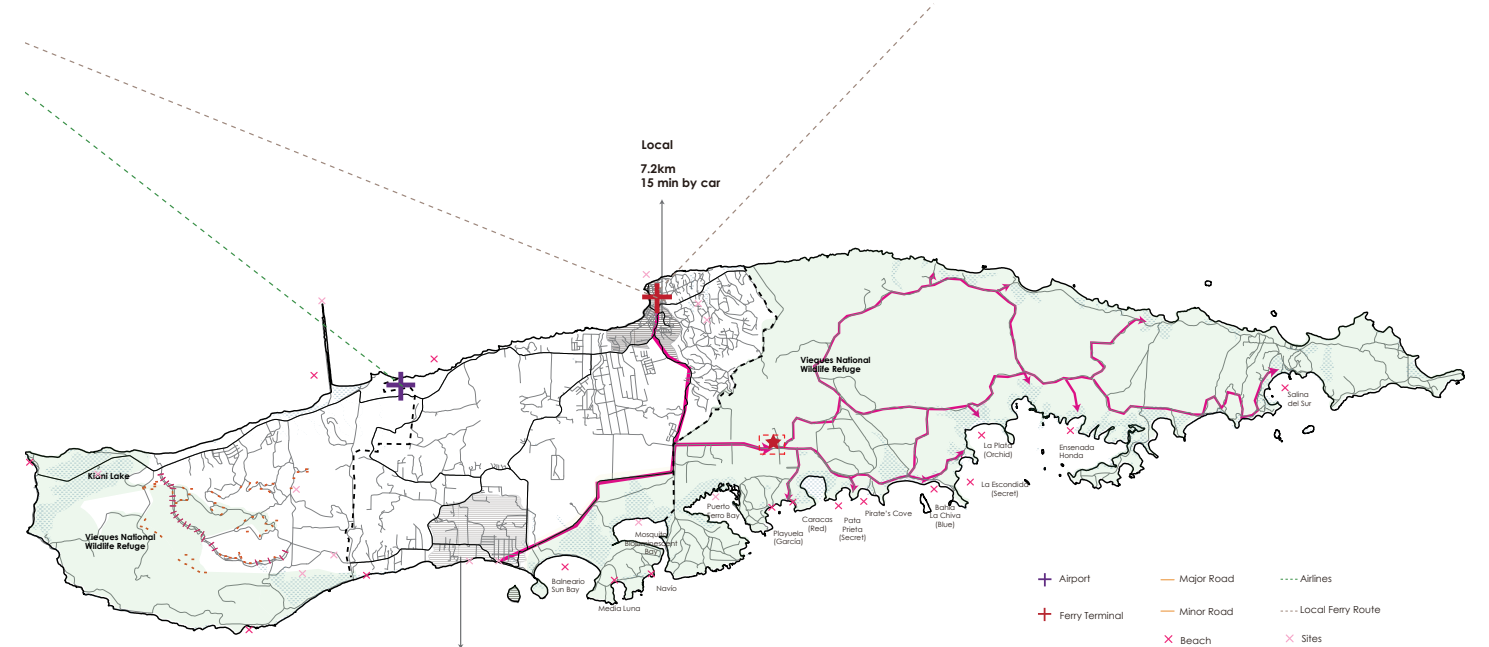
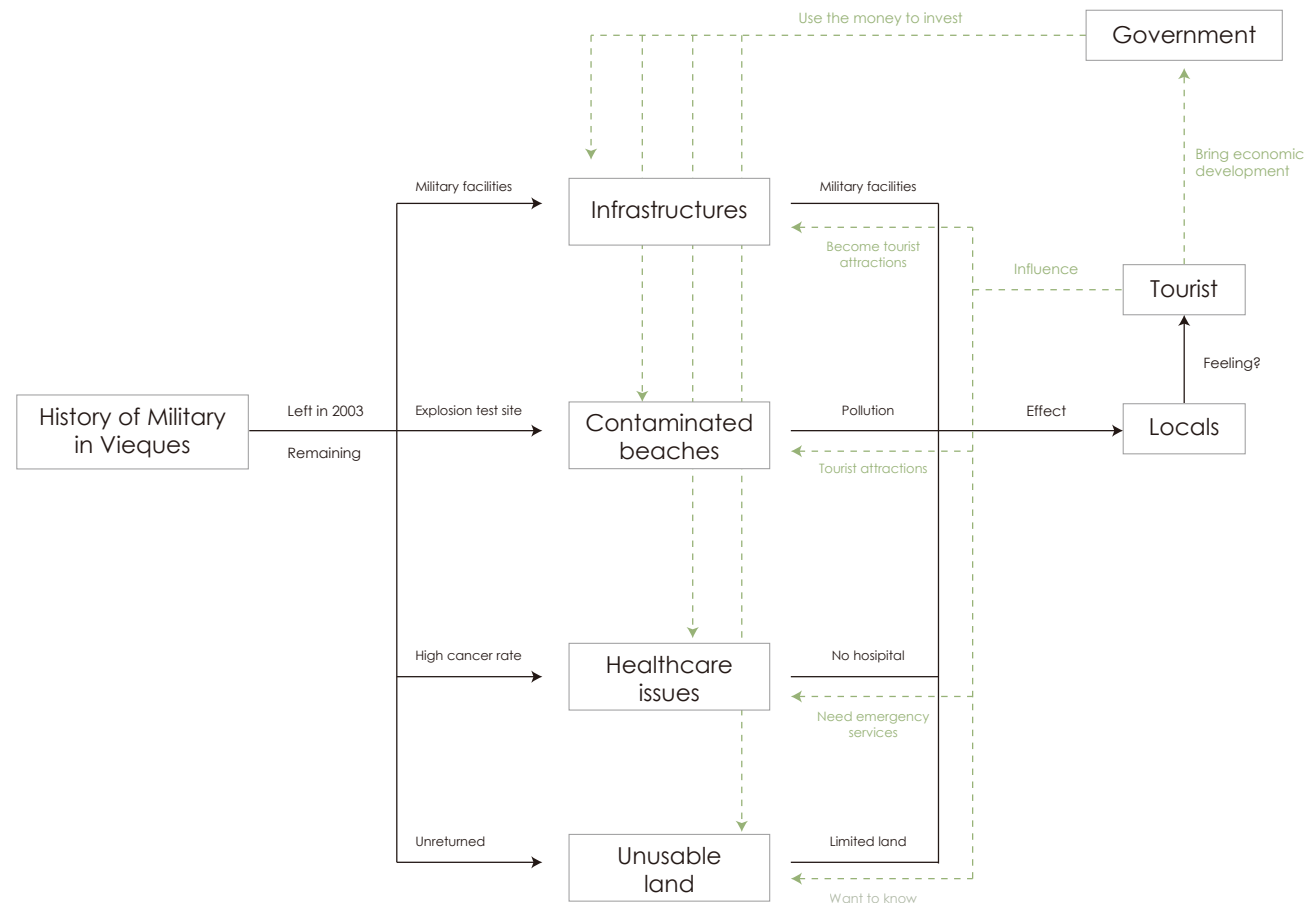
Unexploded Explosive Ordnance = UXO

Potential Area of Concern = PAOC FF (Part of UXO 17)

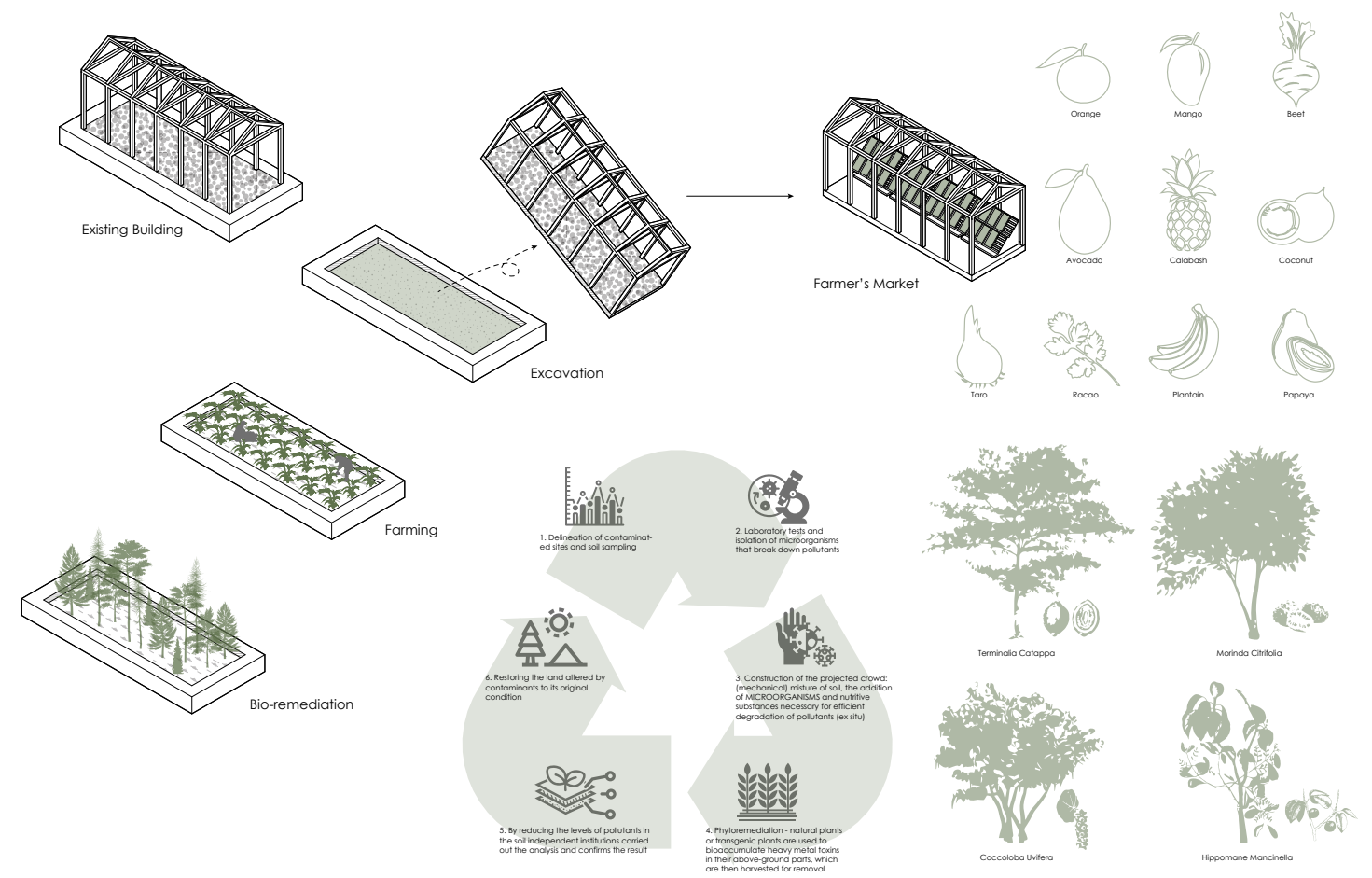
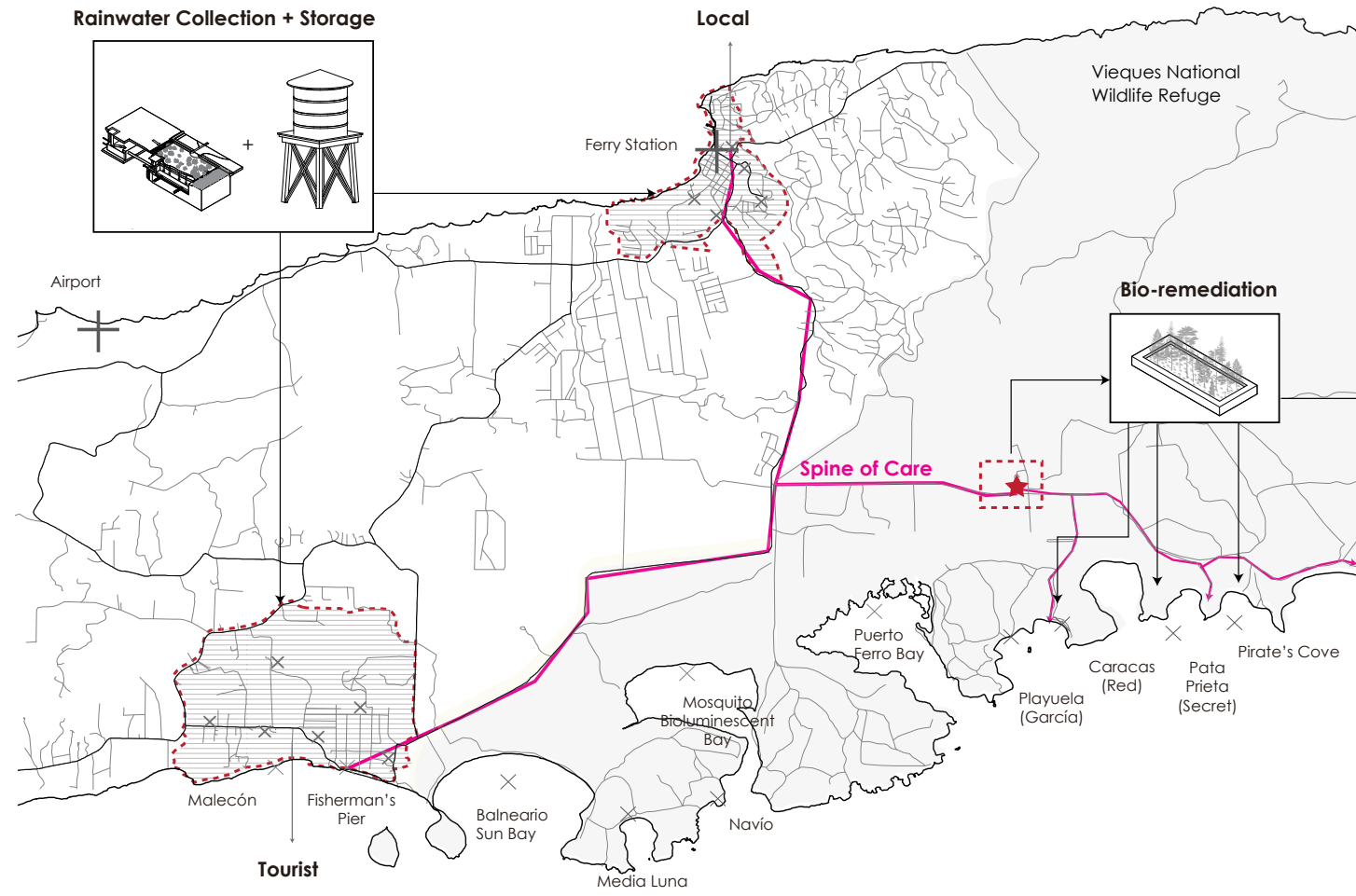
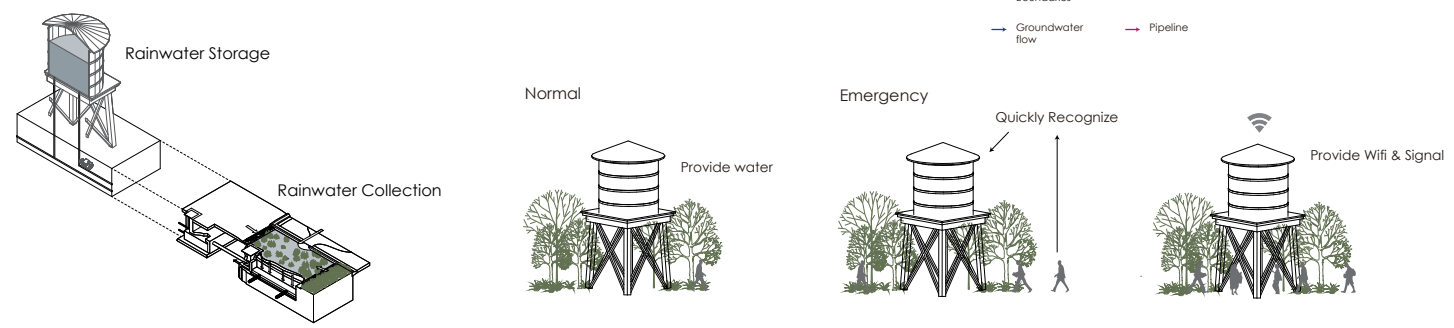
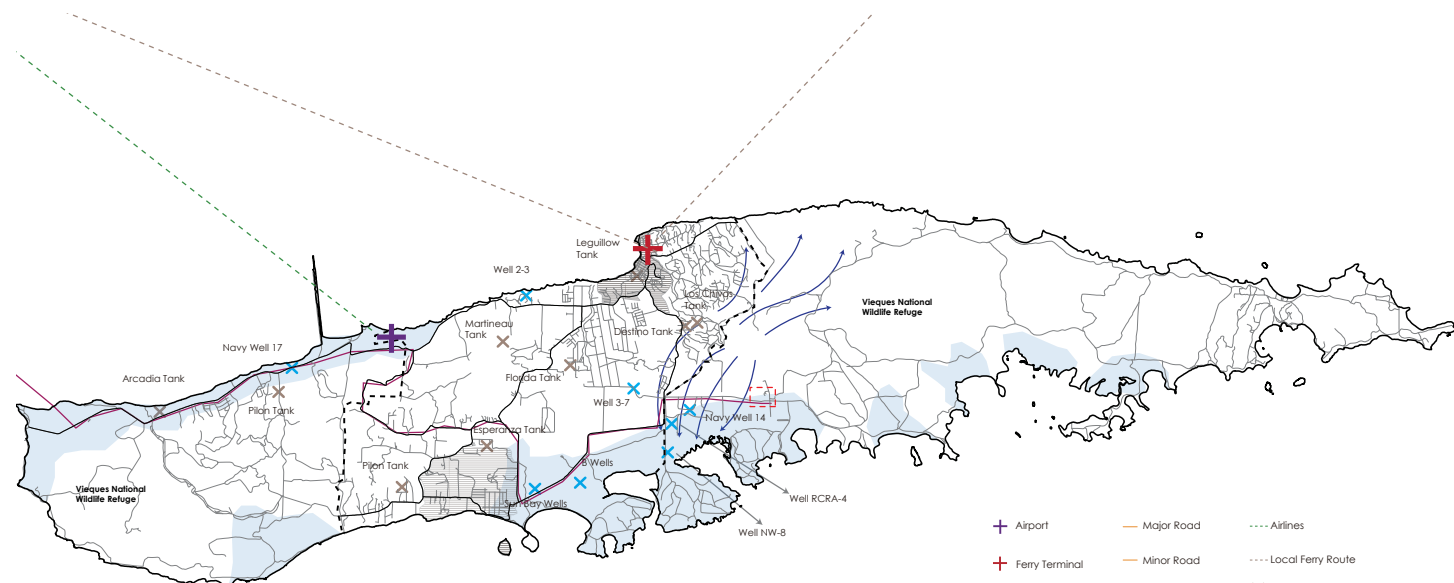
Photo Identified Site = PI 14 (Part of UXO 17)

PI 21 (Part of UXO 17)

SWMU 4	Inactive Open Burn/Waste Explosive Detonation Range	AOC F	Former UIC Septic Tank	UXO 9	Surface Impact Area (SIA) Exterior	PIAS	Potential Former Motor Pool Area (Including Building 34E) and Former Fire Department Building 300, SWMU 20, Camp Garcia Runway, PI 5, SWMU 10 and AOC G, and SWMU 1	AOC F	Former Rock Quarry	PAOC V	Former Leaking Transformer Storage Area
UXO 16	Underwater Areas	AOC I	Former Alpha Plant	UXO 10	Surface Impact Area (SIA) Interior	AOC G	Pump Station and Chlorination Building of Sewage Lagoons	AOC G	Pump Station and Chlorination Building of Sewage Lagoons	PAOC W	Former Area of Stagnant, Discarded Water
AOC E	Former Underground Storage Tank Site of Building 2014	AOC K	Former Water Well	UXO 11	Eastern Maneuver Area (EMA) Public Roads	PAOC FF	Possible Former Artillery Gun Area	PAOC I	Former Power Plant and Mechanics Shop	PAOC X	Former Debris Area in Rightward Stream
SWMU 7	Former Quebrada Disposal Site	AOC L	Abandoned Septic Tank	UXO 12	Eastern Maneuver Area (EMA) Interior	PI 14	Possible Miscellaneous Debris Disposal Area	PAOC J	Former Vehicle Maintenance Area	PI 5	Former Afield and Associated Ditches
AOC H	Abandoned Power Plant	PIAS	AOC H Former Fire Station Building 304A of the Public Works Area, Potential Former Motor Pool Area, AOC B, SWMU 4, and SWMU 7	UXO 13	Eastern Maneuver Area (EMA) West	PI 21	Possible Location of a Former Artillery Firing Position	PAOC K	Former Wash Rack	PI 6	Former PCB Storage Pad and Vehicle Wash Pad
AOC J	Former Operations/Staging Area Disposal Site	UXO 1	Eastern Conservation Area	UXO 14	Eastern Maneuver Area (EMA) South	SWMU 12	Former Fuel Oil Loading Site	PAOC L	Former Plant and Transformer Storage Area	PI 7	Former Quarry, Ice Drum Disposal Area, and Radar Communication Area
AOC K	Former Staging and Operations Area	UXO 2	Use Impact Area (UIA) Beaches	UXO 15	Puerto Ferro	SWMU 4	Former Waste Area of Building 303 (Camp Garcia)	PAOC M	Former Fuel Facility	PI 8	Former Motor Pool Maintenance Area
SWMU 5	Former BFN/AMAF-4 Disposal Site	UXO 3	Use Impact Area (UIA) Roads	UXO 16	Underwater Areas	SWMU 5	Former Spent Battery Accumulation Area of OP-1	PAOC N	Former Fuel Form and Filling Station	PI 10	Former Wastewater Leach Field
SWMU 6	Former Mangrove Disposal Site	UXO 4	Use Impact Area (UIA) Restricted Roads	UXO 17	Other Sites	SWMU 6	Former Waste Oil and Paint Accumulation Area (Camp Garcia)	PAOC O	Former Boiler Room in Heat Plant Building 238	PI 11	Former Pump Station for Seawater and Sanitary Wastewater Outfall
SWMU 10	Former Waste Paint and Solvents Disposal Ground	UXO 5	Surface Impact Area (SIA) Restricted Roads	UXO 18	Cayo La Chiva	SWMU 8	Former Waste Oil Accumulation Area of OP-1	PAOC P	Former Wastewater Treatment Pumphouse	PI 20	Former Observation Point and Potential Quarry
SWMU 14	Former Wash Rack	UXO 6	Eastern Maneuver Area (EMA) Surface Impact Area (SIA) Public Roads	SWMU 1	Former Camp Garcia Laundry	SWMU 10	Former Sewage Treatment Lagoons	PAOC Q/R	Former Boiler Rooms in Heat Plant Buildings 407 and 417		
SWMU 15	Former Waste Transportation Vehicle Parking Area	UXO 7	Eastern Maneuver Area (EMA) Surface Impact Area (SIA) North Beaches	SWMU 20	Former Helicopter Maintenance Area, Restricted Area, Disputed Area, and Bermed Area used for Fuel Booster Storage	SWMU 10	Former Waste Paint and Solvents Disposal Ground	PAOC S	Former PCL Pipeline and Power Plant		
AOC B	Former Wastewater Treatment Plant (WWT)	UXO 7	Surface Impact Area (SIA) South Beaches	AOC A	Former Diesel Fuel Fill Pipe Area	SWMU 12	Former Solid Waste Collection Unit Area	PAOC T	Former Public Works Grounds Contractor Storage Shed and Mechanics Shop		
AOC C	Drainage Ditch of Former Transportation Shop	UXO 7	Surface Impact Area (SIA) South Beaches					PAOC U	Former Vehicle Maintenance Area		







# COVID-19 & VIEQUES

**NO HAY UN HOSPITAL  
THERE IS NO HOSPITAL**

Casos críticos serán atendidos en la isla grande.

Critical treatment is available only on the main island.

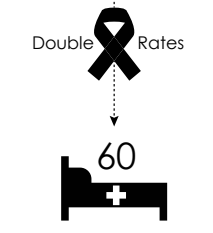
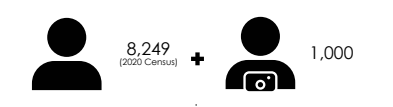
Protejamos todos siguiendo las reglas mandatorias:

Protect us and ourselves by following these mandatory rules:

**UTILIZA LA MASCARILLA** **WEAR A MASK**

**MANTEN LA DISTANCIA** **KEEP YOUR DISTANCE**

**DESINFECTA** **SANITIZE**



- Emergency
- Maternity
- Pediatric
- Surgery
- Cancer
- Psychiatric
- Pharmacy
- Imaging Center



