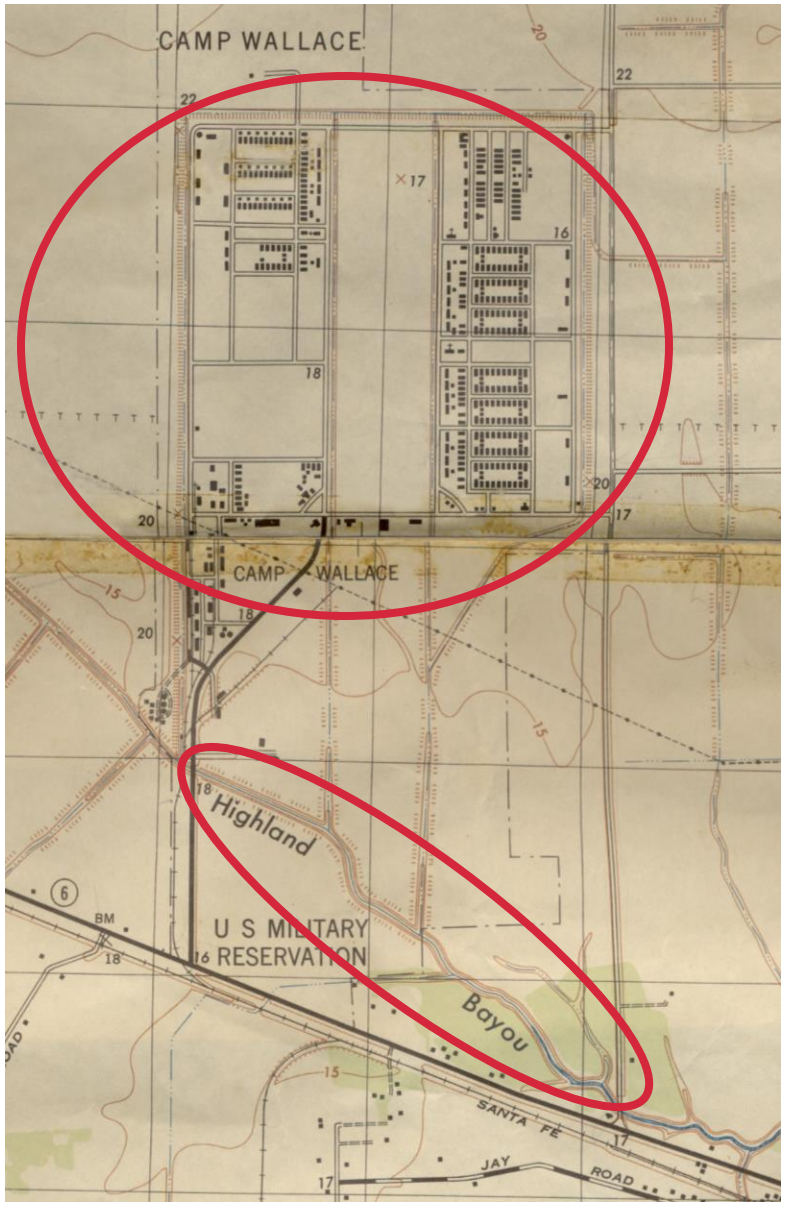
UNIVERSITY of HOUSTON

Institute for Ecological Resilience

UH Coastal Center at La Marque,TX

Texas Institute for Coastal Prairie Research and Education

Putting a Coastal Prairie & Wetland Vision on the Ground at UHCC



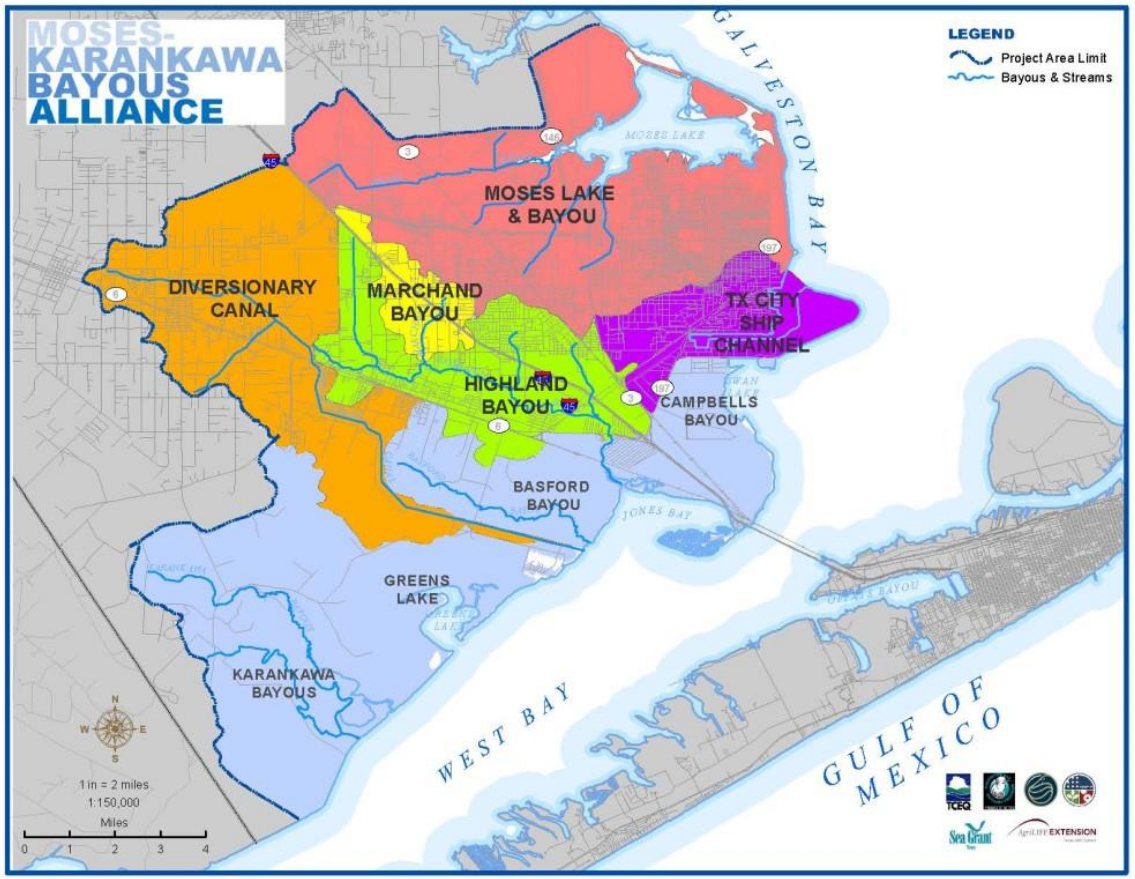
UHCC is within Highland Bayou watershed and Lower Galveston Bay watershed

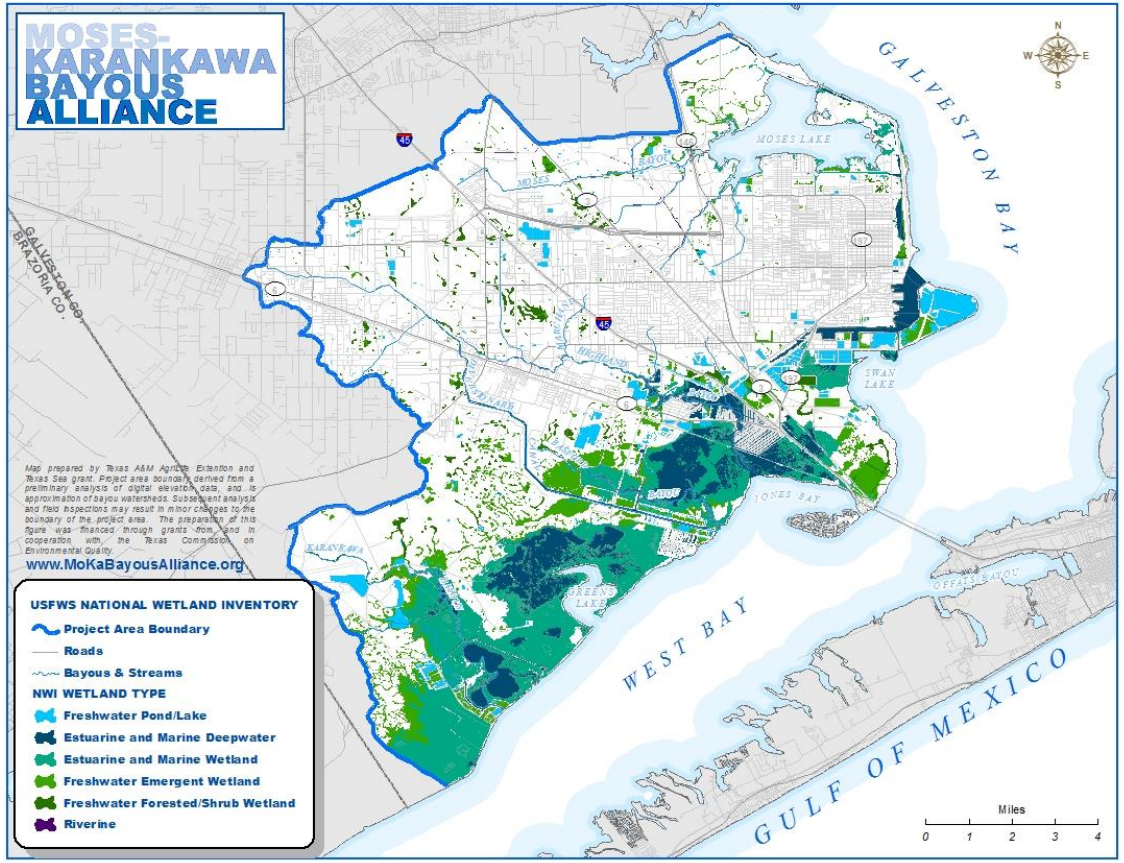
Resilient coasts require healthy watersheds

- Coastal Prairie an integral link to watersheds
- Coastal Prairie retards runoff into collecting stream, lessens erosion, improves water quality of receiving watershed and downstream
- Healthy watersheds do not guarantee ecological health of the coast, but coastal waters cannot provide quality habitat without healthy watersheds
- Coastal ecosystem is continuum from prairie to watershed to coastal marshes

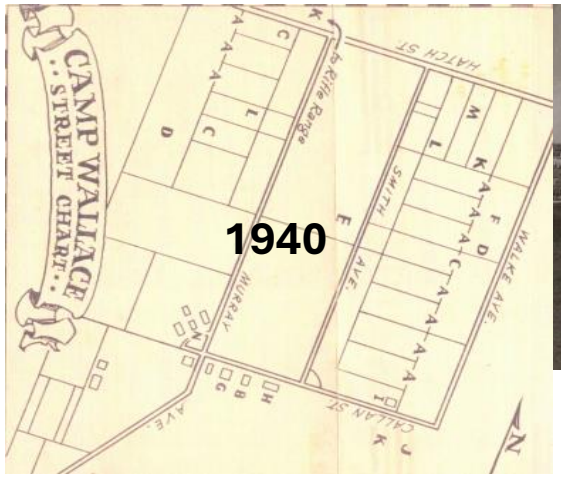
UHCC Coastal Prairie linked to Highland Bayou linked to Galveston Bay

Multiple Watersheds linked to Lower Galveston Bay





Cattle Range ➡ Camp Wallace ➡ UHCC
Home of Tx Institute for Coastal Prairie Research and Education



- **Nov. 1940**-Camp Wallace Army Coast Artillery Replacement Training center construction begins on former cattle range with roads of oyster shell dredged from Red Fish Bar, remnant of a barrier reef across Galveston Bay housing 10,000 trainees
- Post World War II - Camp Wallace is surplus
- **1960**-University of Houston receives first parcel
- **1972**-Current UH Coastal Center 925-acre parcel established
- **2017**-Designation as Texas Institute for Coastal Prairie Research and Education via HB2285 expanded purpose beyond UH research field station
- **2025**-Expanded opportunities after UHCC moves to the newly formed Institute for Ecological Resilience

World War II + 80 years

- Woody brush dominates former building sites and fringes roads
- Additional manmade water features
- County Drainage District canal
- Chinese tallow invasion
- UHCC has a slice of the remaining Gulf Coast prairie *at the landscape level*
- 100-acre core of high quality, never-plowed coastal prairie

UHCC Restoration Goals

- Increase habitat **connectivity** - Prairie to Prairie and Prairie to Wetland
- Remove **undesirable seed sources - includes woody and grass species**
- Improve **access** for maintenance
- Control invasive species so that coastal prairie can be maintained through combination of spot herbiciding, mowing, and prescribed burning
- Wetland enhancement for wildlife

Habitat Restoration Progress Fall 2018 to Present

- Returned ~100 acres degraded by tallow tree/brush invasion to active coastal prairie management through treatment by cutting, shredding, herbiciding and mowing
- Additional 100 acres treated September 2022 by aerial spraying targeting Chinese tallow supported by cooperative agreement between U.S. Fish and Wildlife Service, Ducks Unlimited, and UHCC. First use of aerial herbicide application at UHCC. Treatment areas prioritized to improve habitat **connectivity**.
- Currently ~200 acres of coastal prairie managed by mowing, spot herbicide, & prescribed fire and another 100 acres under restoration
- Six prescribed burns since January 2020 over 200 unique acres with goal of 3-year burn cycle

The Route to Restoration: Start with Chinese Tallow (*Triadica sebifera*)

Treatment of woody brush depends upon

- Stem/trunk diameter and height
  - Choice of cut stump or hack & squirt or girdling
- Density of woody brush
  - Choice of ground crew or mechanical
- Amount of contiguous acreage
  - Choice of ground or aerial
- Species of invasive woody vegetation
  - Choice of herbicide
- Budget

Mechanical Removal as Alternative for Dense Woody Areas

But the 1st mulching is just the 1st step----

Wait 1 Year for coarse mulch to decompose

Mulch again & burn

March 10, 2025 Prescribed Burn

In five months------
Fire is a natural part of prairie ecology

March 10, 2025

August 8, 2025

RESTORATION

Aerial spraying by helicopter of 100 acres in the fall 2022

Sept 9, 2022 Daybreak Aerial Spraying

Aerial Spraying for Tallow Control

Spring 2023
Views of some areas treated with aerial herbicide in September 2022

August 2025
Mulching of some areas treated with aerial herbicide in September 2022

RESTORATION is a <u>PROCESS</u> not an EVENT

Restoration ⇒ Prairie Maintenance

Spot herbicide treatment of invasive species

Mowing

Cycle of Prescribed Burning

Soil Carbon = Restoration Progress?

- Baseline study at UHCC of 77 random core samples , from units representative of highest quality prairie (Aumann Prairie), restoration prairie, units treated for woody brush, and untreated woody brush with reference study of 15 core samples at Lawther-Deer Park Prairie owned by Native Prairies Association of Texas
- Better quality prairie units at UH Coastal Center have higher Total Carbon and Soil Organic Carbon than lesser quality prairie units or woody brush units
- Shredded woody brush units have higher Total Carbon and Soil Organic Carbon than woody brush treated with herbicide only
- If soil carbon storage can be monetized, it can provide economic incentive for preservation of existing prairie, restoration of degraded prairie as mitigation, or to refrain from converting prairie to crops or “improved” pasture
- Key is research of soil carbon sequestration as a measure of environmental quality and restoration progress, based upon soil baseline studies

Soil Carbon Economic Incentives

- If value of ability of prairie to store carbon in the soil can be monetized, it creates economic incentives
- Carbon storage can provide economic incentive for preservation of existing prairie or to refrain from converting prairie to crops or “improved” pasture
- Can be incentive for restoring degraded prairie if soil carbon increase can be documented over restoration timeline
- Potential of prairie restoration as mitigation ----

If wetland can be mitigated, why not prairie?

Future Plans and Projects

- Greenhouse & growing fields
- Propagation of native milkweed species and other species from seed collected at UHCC
- Enhance wetlands on property
- Oystershell project with TPWD to create living shoreline at Galveston Island SP with oystershell excavated from UHCC while restoring prairie & creating 1-acre wetland
- 5th annual Coastal Prairies Restoration Practitioners Forum , co-hosted with TPWD
- Soil carbon baseline study –value of carbon storage
- Expand restored prairie acreage
- Expand outreach and volunteer opportunities, such as the Houston Monarch Story and the Glow Patrol

Benefits of a Healthy Coastal Prairie

- ***The Aumann Prairie at UH Coastal Center has particular merit because it provides a "gold standard" by which other coastal prairie restorations can measured.***
- Deep-rooted coastal prairie grasses allow water to percolate into the soil, absorbing and storing rainfall and slowing the overland water flow into streams during storms.
- Native coastal prairie grasses provide superior erosion control compared to non-native ground covers due to deeper root systems.
- Coastal prairies are better adapted to survive periodic drought, fire, and flood
- Biodiversity of healthy coastal prairie supports healthy wildlife populations of resident and migratory birds, small mammals, and insects.
- Diversity of flowering forbs and grasses benefit pollinator populations.
- Healthy coastal prairies act as seed sources for future prairie restorations.
- Coastal prairies act as carbon sinks, absorbing carbon dioxide during photosynthesis and storing converted carbon in the root systems and soil.

Where to find more information

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