Lost Among the Skeletons: Mapping Remnant Live Oak Habitats in Southeast Louisiana & Exploring Cultural Loss in Ghost Forests

Rachel Billiot-Bruleigh, United Houma Nation
Haskell Environmental Research Studies Institute

Live Oak Losses in Southeast Louisiana

Clearing of live oak natural levee forests for agricultural & residential development began during the settler-colonial period. Only one to five percent of their historic range remain, and these forest remnants are highly fragmented. Live oak forests face additional threats from invasive species, saltwater intrusion, & infrastructure development. [DANF 2005, Day Jr. et al. 2007, White and Skojač 2002]

Ghost Forests & Saltwater Intrusion

- Ghost Forests are stands of dead trees left behind after saltwater intrusion into freshwater forests
- Causes of Saltwater Intrusion:
  - Leveeing of the Mississippi to halt seasonal flooding
  - Oil & natural gas extraction leading to down-faulting
  - Hurricane storm surge in impounded wetlands
  - Deep, straight navigation & oil extraction canals act as passages for saltwater intrusion

Remnant Oak Forests & Land Loss Maps

Live Oak Forest Biodiversity & Indigenous Communities

Live oak forests are culturally significant to local Indigenous communities:
- Source of many traditional foods & medicinal plants
- Wildlife habitat for Louisiana black bear, bald eagle, and wetland & migratory birds
- Provide protection from heat, hurricane winds, & storm surge
- Guardians of sacred burial mounds
- Plant diversity declines as the land changes from freshwater to saltwater ecosystems:
  - Traditional food & medicinal systems restricted to salt-tolerant species

These changes result in dwindling access to sacred areas & subsistence activities related to live oak forests.


Natural Protection Efforts

- Oyster Shell Reefs are natural breakwaters that protect shorelines against wave erosion and storm surge, preventing further habitat migration and land loss. One elder taught his children the importance of returning oyster shells to the bay around a burial mound, so reefs could replenish themselves and continue to protect the land.
- River Diversions, which allow freshwater & sediments from the Mississippi River to reach the wetlands and build the land back up
- Marsh Restoration, by encouraging replanting in at-risk areas supported through sediment diversions

Conclusion

Habitat change occurs as freshwater systems, like live oak forests, convert to saltwater marshes that can handle the new brackish conditions. Continued erosion eventually leads to completely open waters. Live oaks can grow to be several hundred to over a thousand years old. They are elders who teach lessons about community, support, change, and generosity. Live oak forests act as cultural protections for the way they provide food and medicinal plants, guard burial grounds, and shelter against intense heat or strong storms. In return, we must also protect these elders and the communities they form.

References


Acknowledgements

1 I would like to thank the Haskell Environmental Research Studies Institute (HERS), EPSCoR, the National Science Foundation (NSF), Haskell Indian Nations University, and the University of Kansas. I would also like to acknowledge Josh Mans, James Fischer, Kate Ingoeff, Trina McClure, Phillip Cody Marshall, and Dr. Jay Johnson, Tammy Greer, and Richard Keim.

This project was supported by KS/NSF EPSCoR Award 1658006.

Contact

Rachel Billiot-Bruleigh
Interdisciplinary Studies
Cultural & Environmental Studies
rae.billiotbruleigh@gmail.com