Phragmites australis Mapping and Removal

North Carolina Coastal Reserve and NERR

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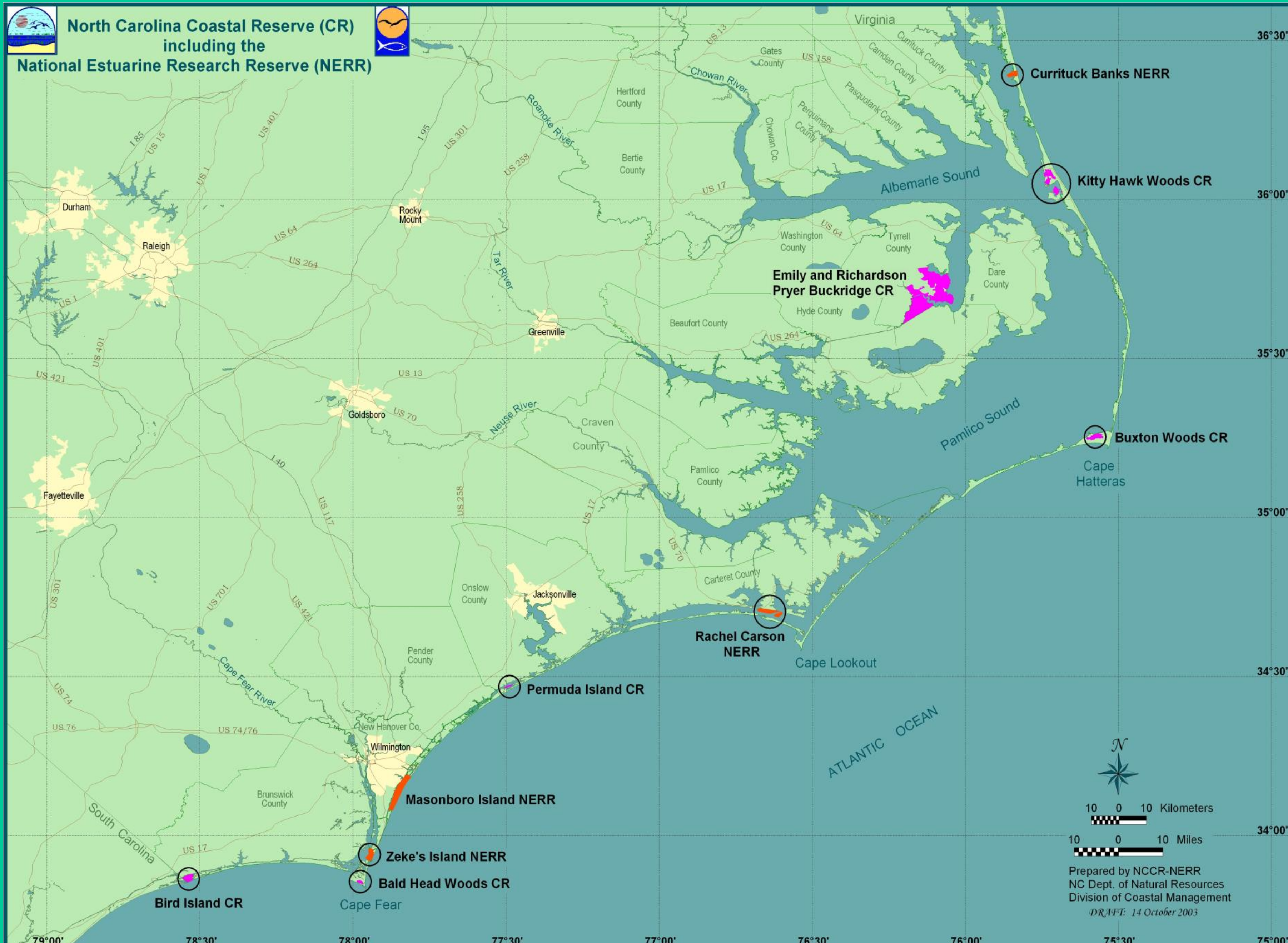
Funded by APNEP

Assistance from ECSU


North Carolina Coastal Reserve (CR)
including the
National Estuarine Research Reserve (NERR)
Virginia
Currituck Banks NERR
Kitty Hawk Woods CR
Emily and Richardson
Pryer Buckridge CR
Buxton Woods CR
Cape
Hatteras
Rachel Carson
NERR
Cape Lookout
Permuda Island CR
Masonboro Island NERR
Zeke's Island NERR
Bald Head Woods CR
Bird Island CR
Cape Fear
Albemarle Sound
Pamlico Sound
ATLANTIC OCEAN
South Carolina
Chowan River
Roanoke River
Tar River
Neuse River
Cape Fear River
Gates County
Hertford County
Bertie County
Chowan Co.
Perquimans County
Pasquotank County
Camden County
Currituck County
Washington County
Tyrrell County
Dare County
Hyde County
Beaufort County
Craven County
Pamlico County
Carteret County
Onslow County
Pender County
New Hanover Co.
Brunswick County
Durham
Raleigh
Rocky Mount
Greenville
Goldsboro
Fayetteville
Jacksonville
Wilmington
US 13
US 158
US 17
US 64
US 264
US 258
US 301
I 95
US 401
US 1
I 85
US 15
US 421
US 70
I 40
US 117
US 701
US 74
US 76
US 74/76
N
10 0 10 Kilometers
10 0 10 Miles
36°30'
36°00'
35°30'
35°00'
34°30'
34°00'
79°00'
78°30'
78°00'
77°30'
77°00'
76°30'
76°00'
75°30'
75°00'
Prepared by NCCR-NERR
NC Dept. of Natural Resources
Division of Coastal Management
DRAFT: 14 October 2003

Currituck Banks National Estuarine Research Reserve

0 0.2 0.4 0.6 0.8 Miles

N

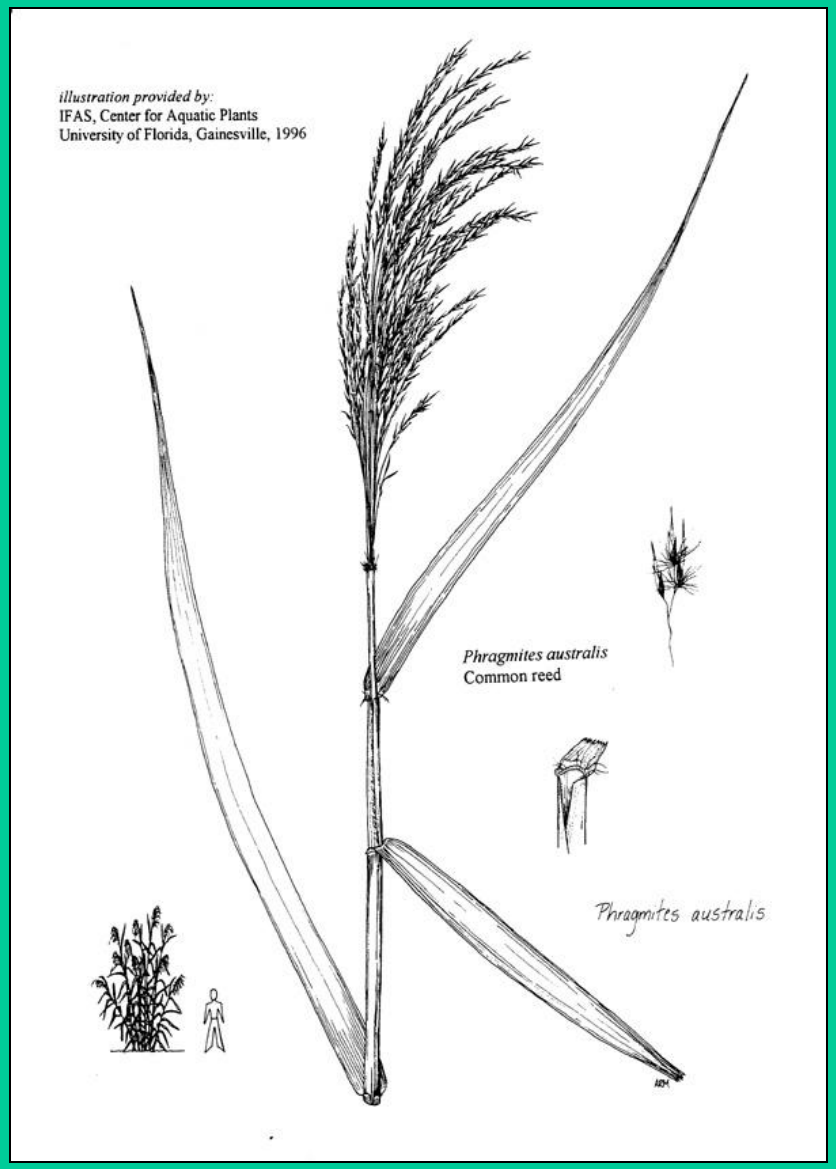
Boardwalk
Maritime Forest Hiking Trail
Fire Break / Hunting Access
Reserve Boundary


Kitty Hawk Woods
North Carolina Coastal Reserve
Hiking Trail
Access Point
Reserve Boundary
Atlantic Ocean
Currituck Sound
Shellbank Point
Hay Point
Long Point
Kitty Hawk Bay
Albemarle Sound
Burnt Island
Sloop Island
Collington Island
N
0.5 0 0.5 Kilometers
Image Date: 03 January 1998
Prepared by NCCR-NERR
DRAFT: 06 October 2003


Phragmites australis
AUG 25 2004


EXIT
AUG 25 2004

Native and non-native *Phragmites*



Alexander Krings
Curator
Department of Botany
North Carolina State University

Native widespread pre1910; decline in diversity since then

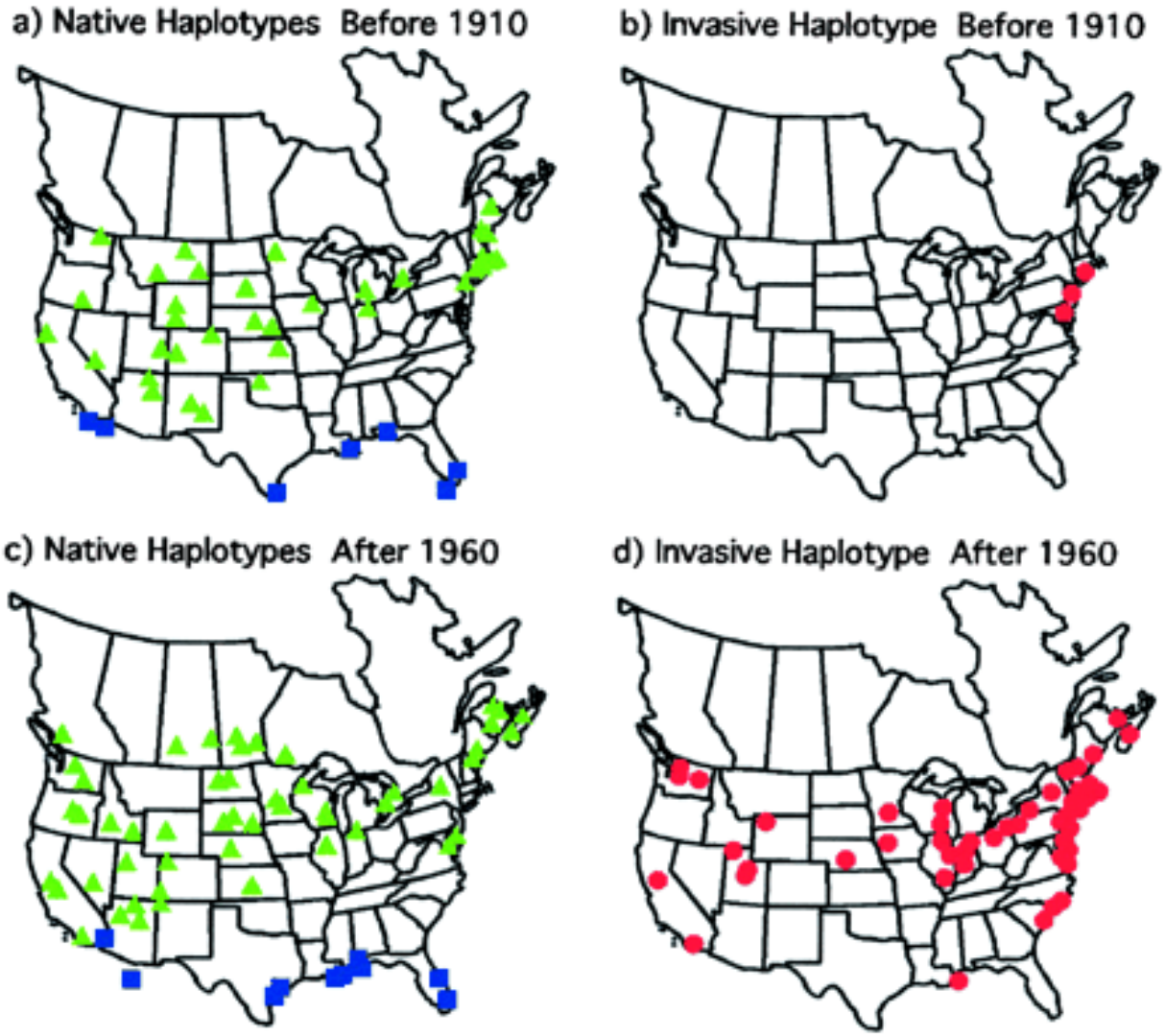
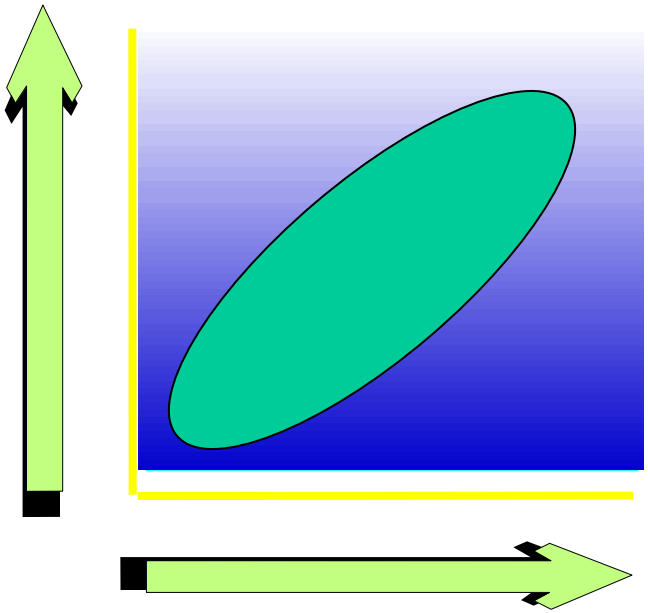


Fig. 2. Distribution of *Phragmites* haplotypes in North America. Green triangles represent the 11 native haplotypes, blue squares represent haplotype I, and red circles represent the invasive haplotype M. (*a* and *b*) The distribution of haplotypes in the 62 herbarium samples collected before 1910. (*c* and *d*) The distribution of haplotypes in 195 samples collected after 1960.

Hydrologic and Chemical Control of *Phragmites* in Tidal Wetlands

Growth Response:

- Biomass
- Flowering
- Height
- Density
- Range



Environmental Gradient:

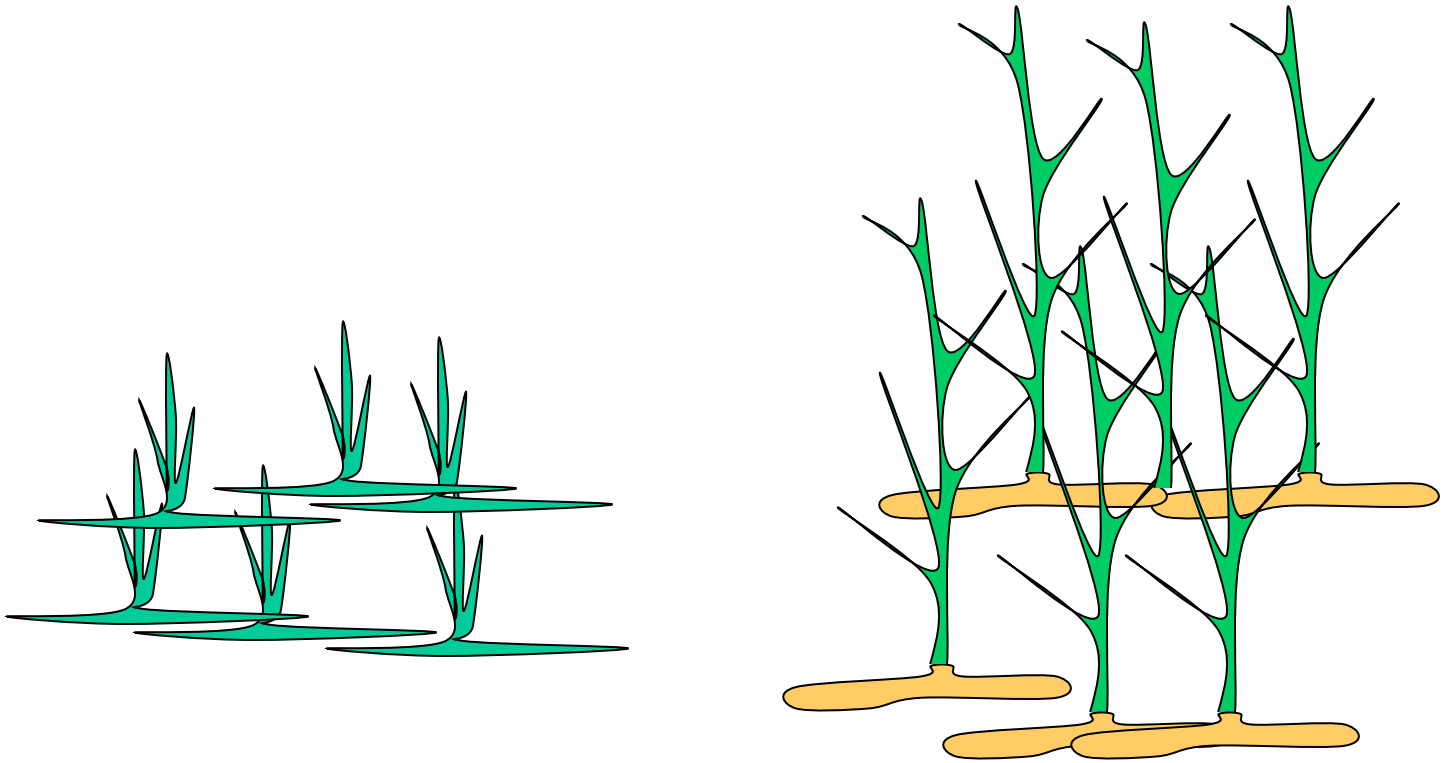
- Exposure Time
- Depth to Water Table
- Marsh Elevation
- Fresh:Salt Water
- Debris Accumulation
- Human Disturbance
- Nutrient Availability

R.M. Chambers

College of William and Mary/VIMS

Ecological Role of *Phragmites australis* in Our Mid-Atlantic Wetlands

Dr. Jim Perry
Virginia Institute of Marine Science

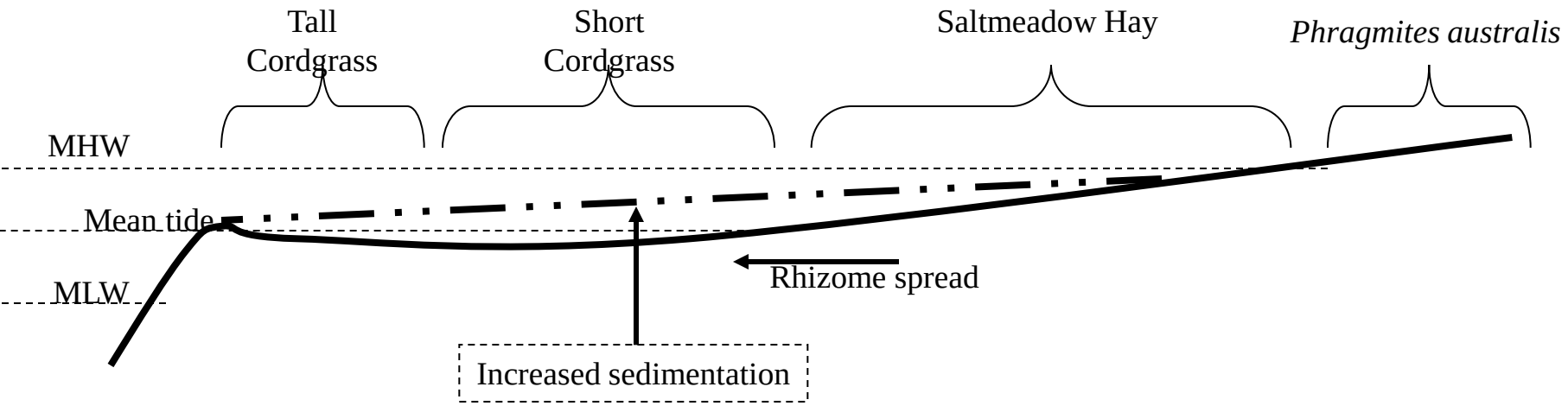


Biomass *P. australis* 2 or 3 X *S. alterniflora* (Meyerson et al. 1999 and others)

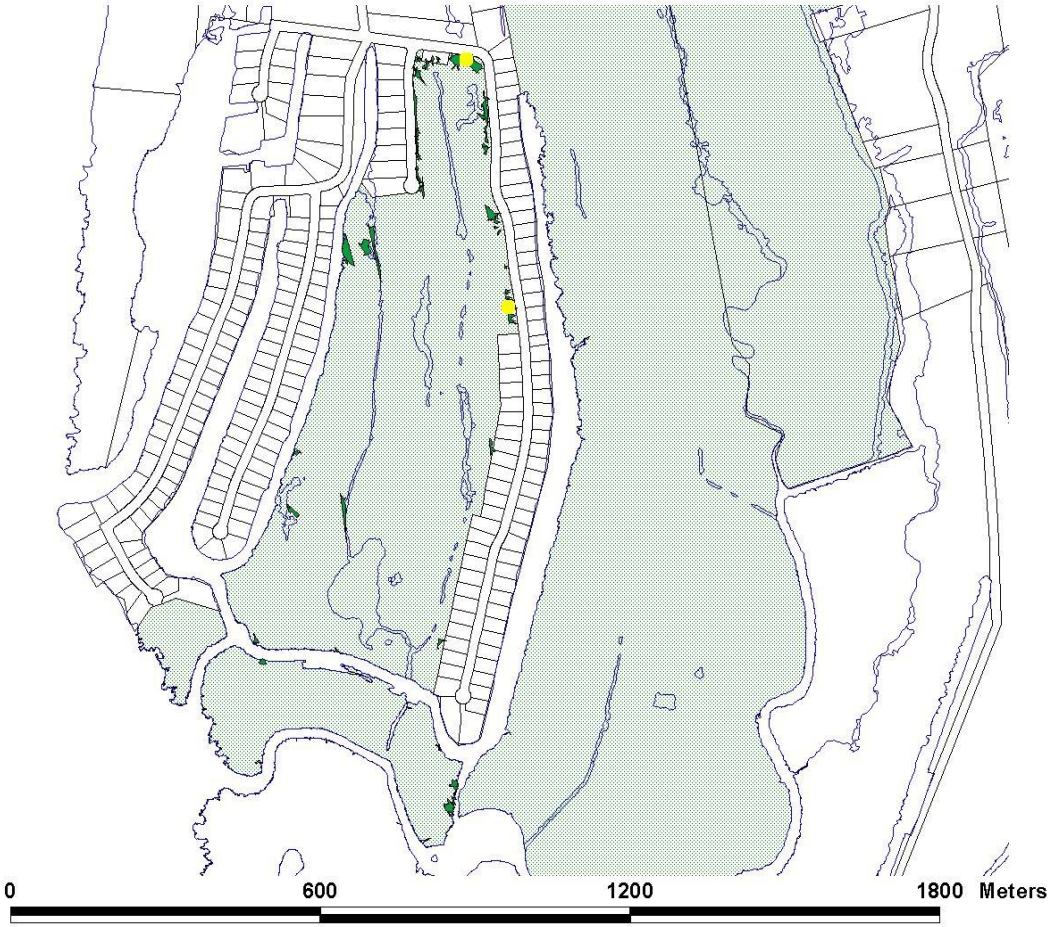
Stored carbon *P. australis* > *S. patens* (*Windham 2001*)

Sedimentation of *P. australis* = *S. cynosuroides (Ld210, Cs131)*

Species diversity of *P. australis* > *S. cynosuroides*



Phragmites Coverage in Kitty Hawk Landing



Phragmites a.	45%
Juncus roemerianus	55%
Baccharis spp	<1%
Spartina patens	<1%
Polygonum spp.	<1%
Hydrocotyle	<1%

SINGLE CUT

Phragmites a.	40%
Juncus roemerianus	60%
Royal Fern	1%
Marsh Fern	1%
Polygonum spp.	<1%

BURN

Phragmites a.	40%
Juncus roemerianus	60%
Spartina patens	<5%
Hydrocotyle spp	<1%
Polygonum spp	<1%

Phragmites a.	30%
Juncus roemerianus	70%
Spartina patens	<2%
Hydrocotyle spp	<1%
Polygonum spp	<5%

MASH

Phragmites a.	**35%**
Juncus roemerianus	**55%**
Spartina patens	**10%**

Phragmites a.	**10%**
Juncus roemerianus	**25%**
Spartina patens	**5%**
Open water (no vegetation)	**60%**

MULTIPLE CUT

Phragmites a.	25%
Juncus roemerianus	65%
Spartina patens	10%

Phragmites a.	<5% (37 shoots)
Juncus roemerianus	70%
Spartina patens	5%
Hydrocotyle	<5%
Scirpus americanus	<5%
A. subulatus	10%
Polygonum spp.	10%
Mikanea scandens	5%
Distichlis spicata	<5%

Phragmites a.	**95%**
Spartina patens	**5%**

COVER

Mikanea scandens	
Pluchea spp	
Spartina patens	
Galium spp.	
Cyperus spp.	
Ranunculus spp.	
Oxypolis filiformis	
Open Water	**98%**

Phragmites a.	**90%**
Baccharis spp	**10%**

SPRAY

Phragmites a.	**1%** **(10 shoots)**
Baccharis spp	**1%**
Pluchea spp	**1%**
Galium spp.	**1%**
Cyperus spp.	**1%**
Ranunculus spp.	**1%**
Oxypolis filiformis	**1%**

Mapping

Phragmites a. Plots over 2003 Natural Color Aerial Photographs

Phragmites a. Plots over 1998 Color Infrared

What Next?