Coastal Change in Mississippi: A Review of 1850 to 1999 data

Pascagoula – SMA

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By

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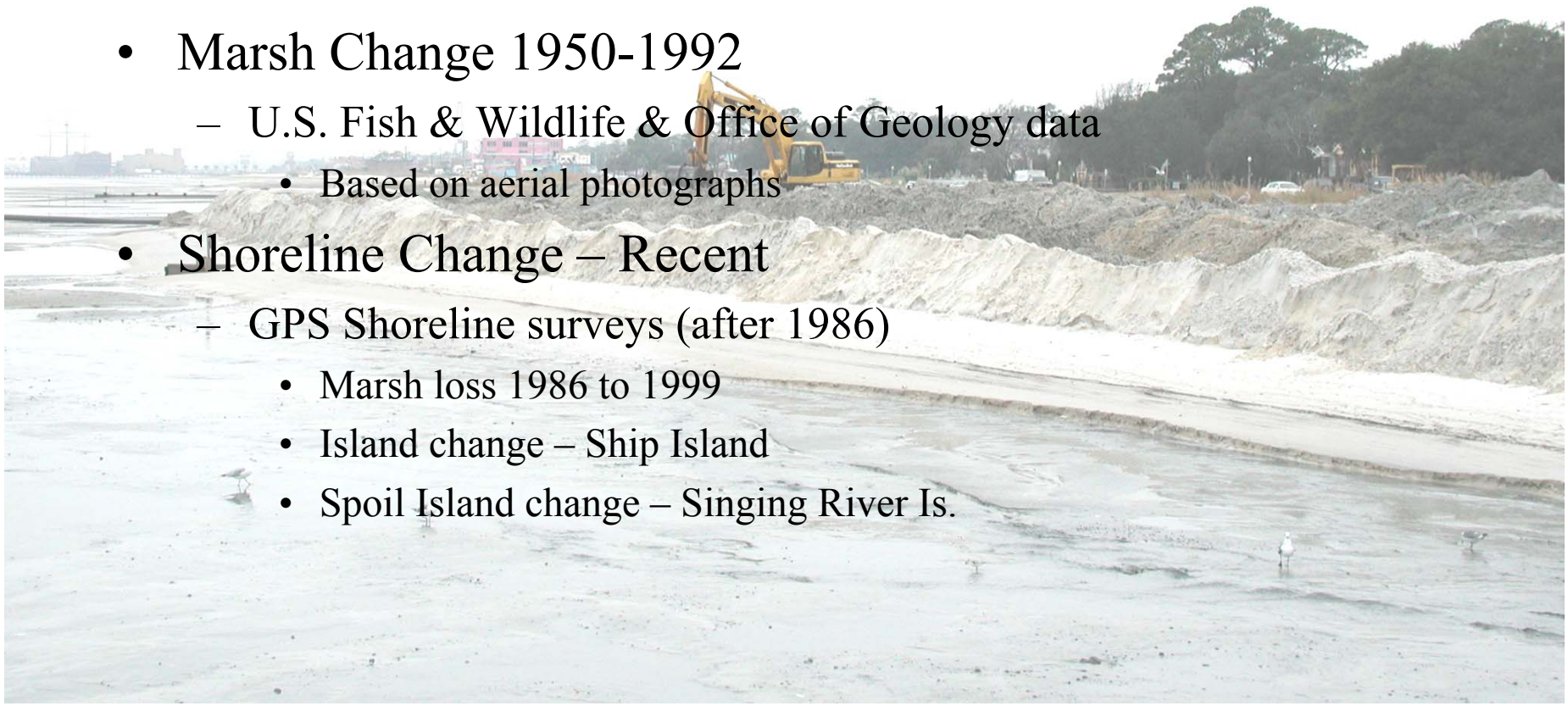
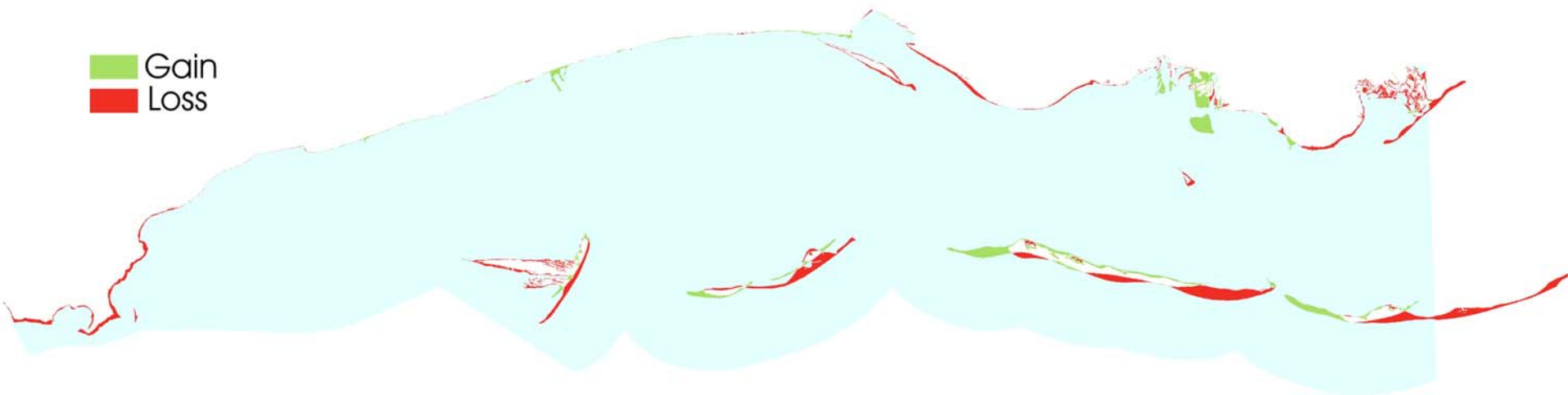
Selected Aspects of Coastal Change

- Shoreline Change – Historic
  - NOS T-Sheets & Aerial Photos
    - 1850 - 1986 Mainland along exposed shoreline
    - 1850 - 1986 Barrier Islands
- Marsh Change 1950-1992
  - U.S. Fish & Wildlife & Office of Geology data
    - Based on aerial photographs
- Shoreline Change – Recent
  - GPS Shoreline surveys (after 1986)
    - Marsh loss 1986 to 1999
    - Island change – Ship Island
    - Spoil Island change – Singing River Is.



Shoreline Change 1850-1986

Data from NOS T-Sheets and aerial photography

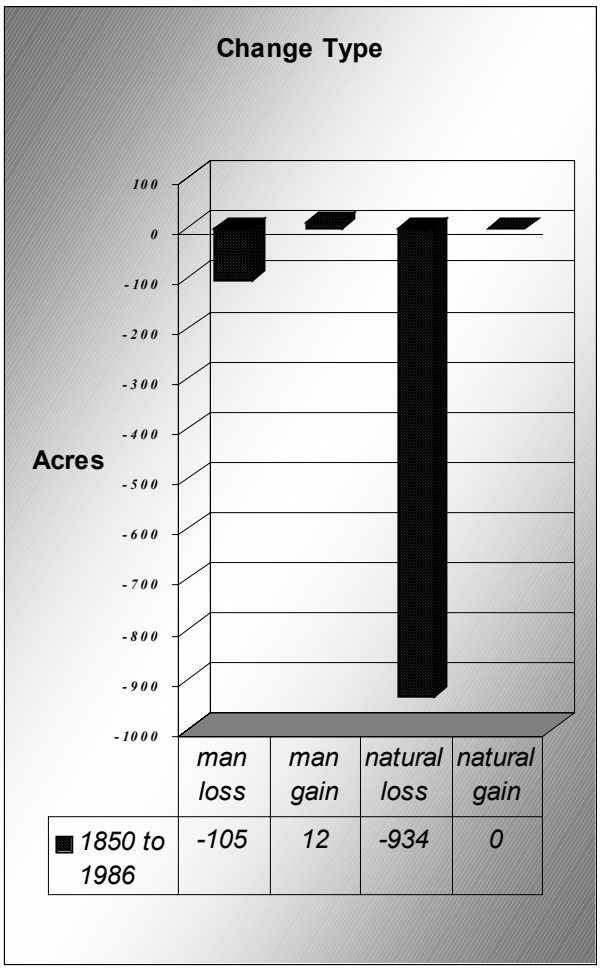


Only areas south of US 90 analyzed (wave influenced)

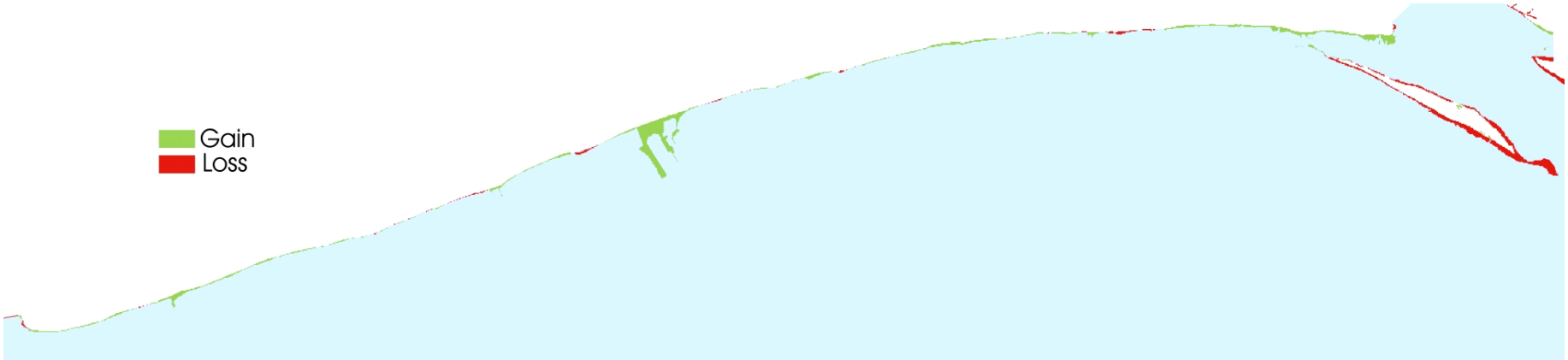
1850-1986 Mainland Shoreline Change – Hancock

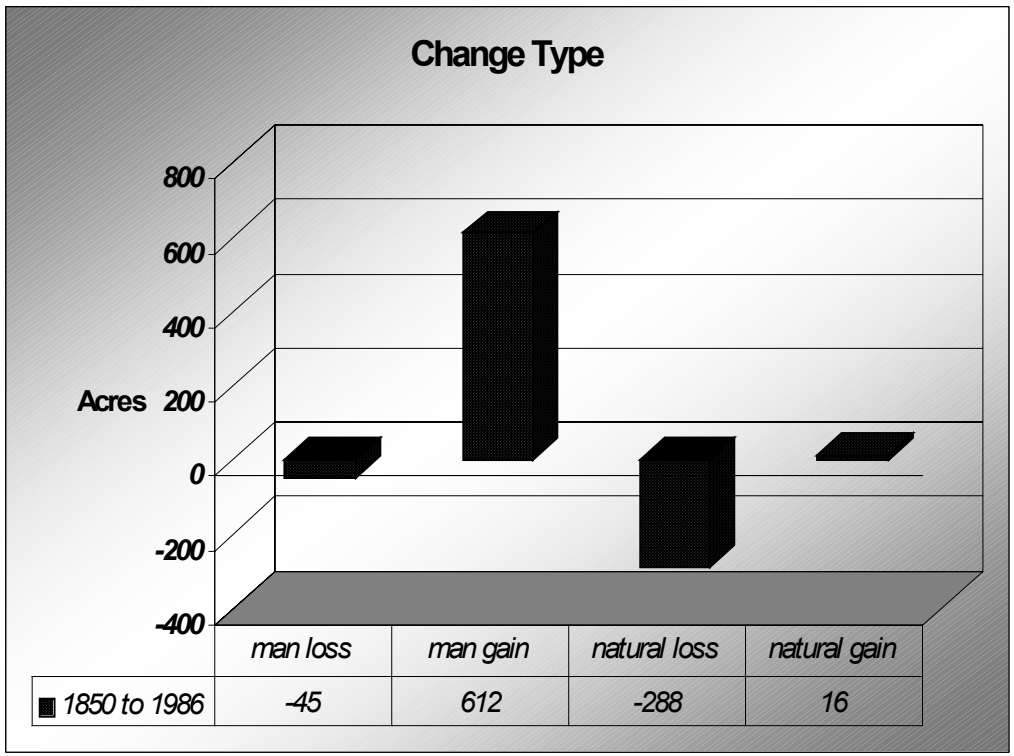
from to	*1850* *1917*	*1917* *1950*	*1950* *1986*	*1850* *1986*
Total loss	-394	-498	-292	-1039
Total gain	88	16	45	13

Net Change = -1,026 acres



1850-1986 Mainland Shoreline Change – Harrison

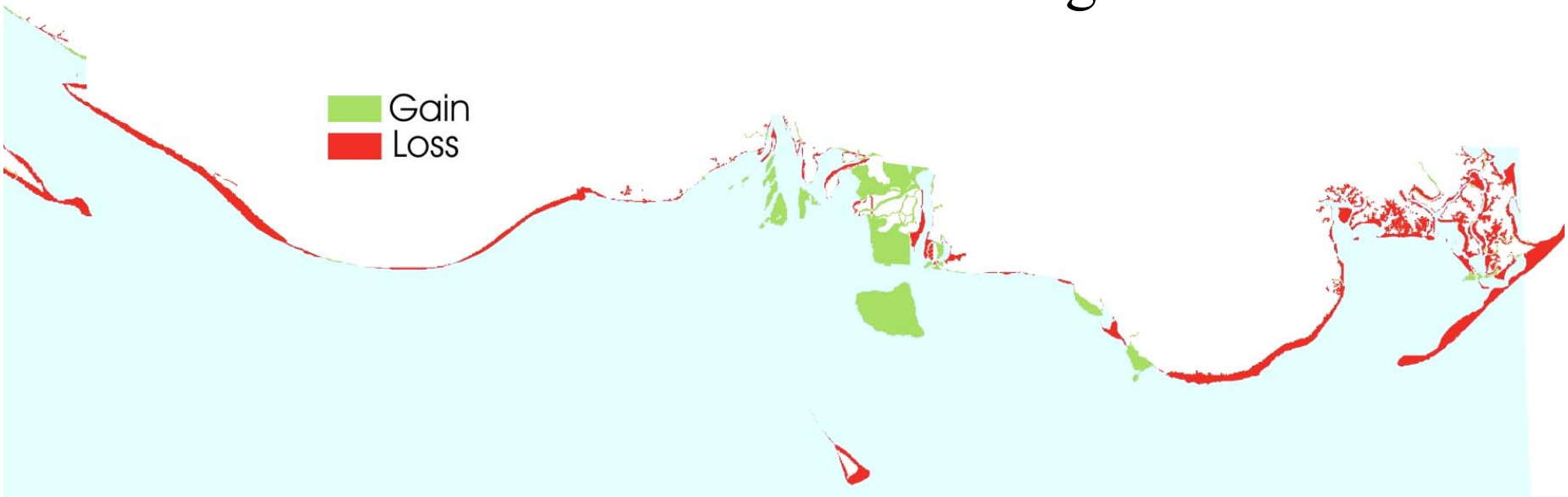


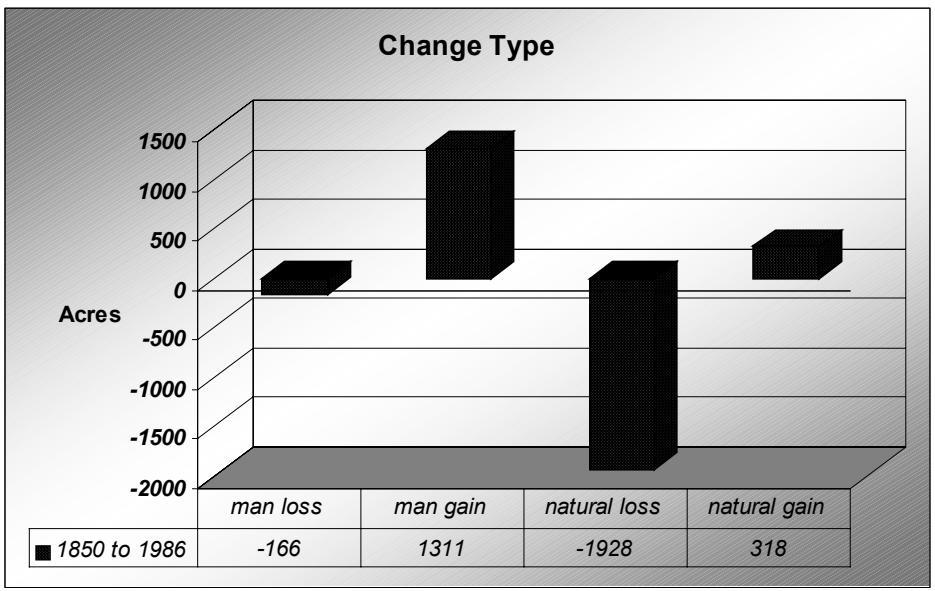


from to	*1850* *1917*	*1917* *1950*	*1950* *1986*	*1850* *1986*
Total loss	-351	-125	-229	-333
Total gain	194	682	117	628

Net Change = +295 acres

1850-1986 Mainland Shoreline Change – Jackson

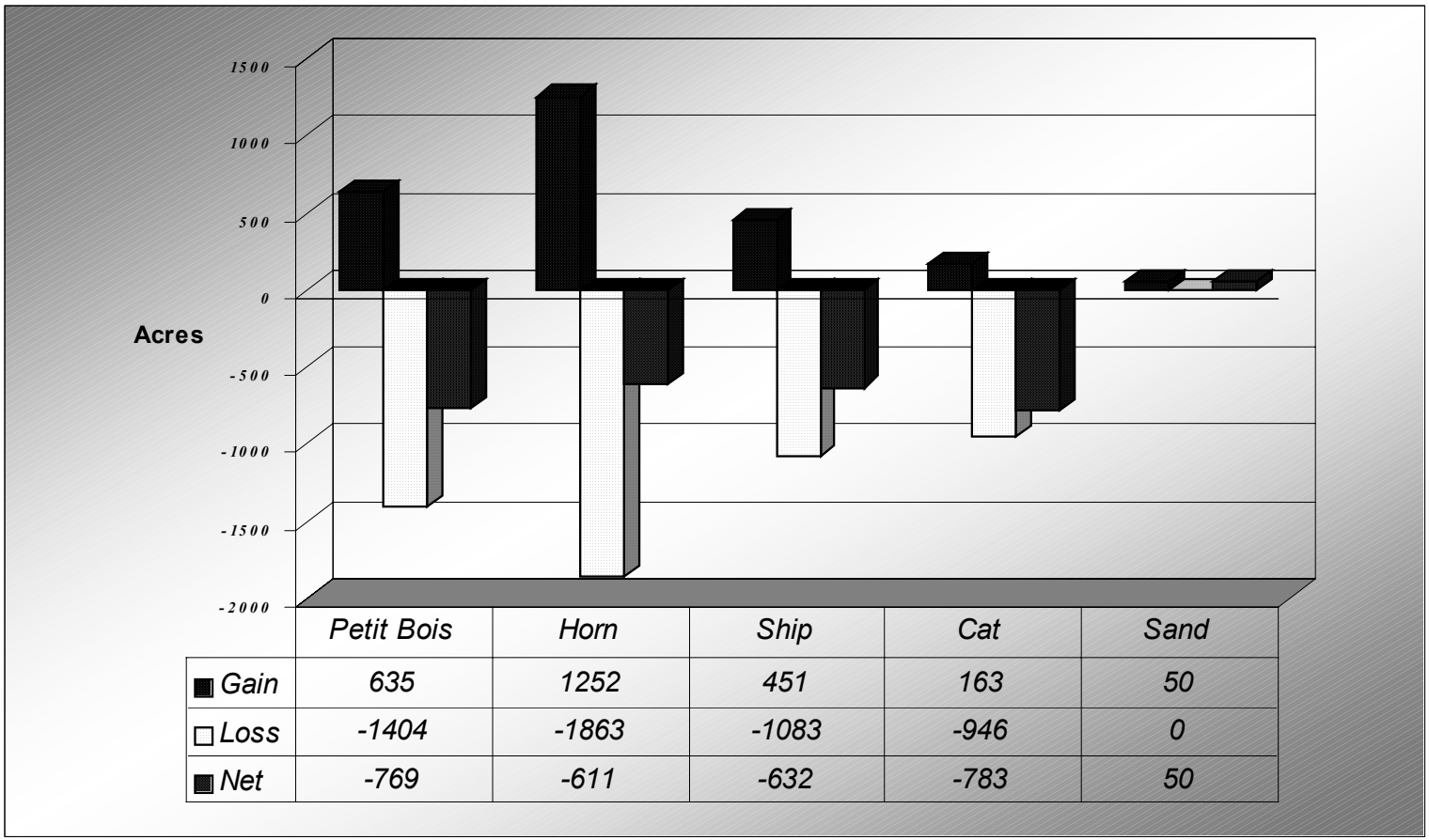




from	1850	1917	1950	1850
to	1917	1950	1986	1986
Total loss	-1344	-993	-726	-2094
Total gain	654	847	1076	1628

Net Change = -466 acres

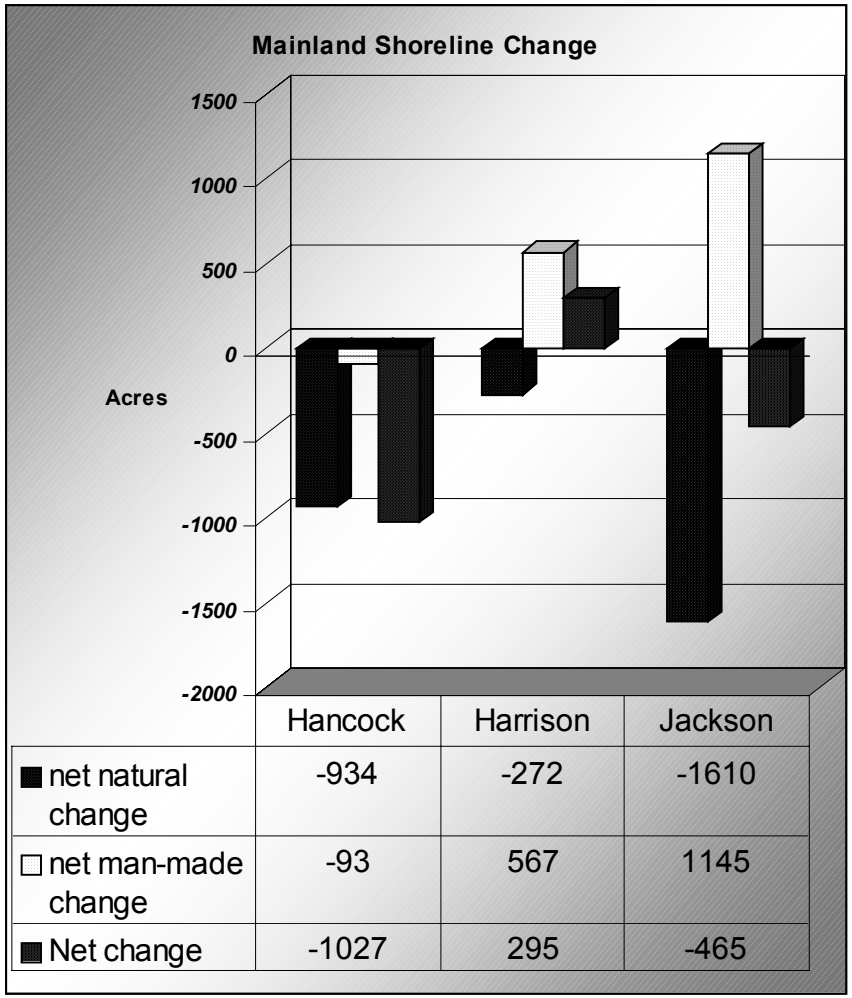
1850-1986 Shoreline Change – Islands



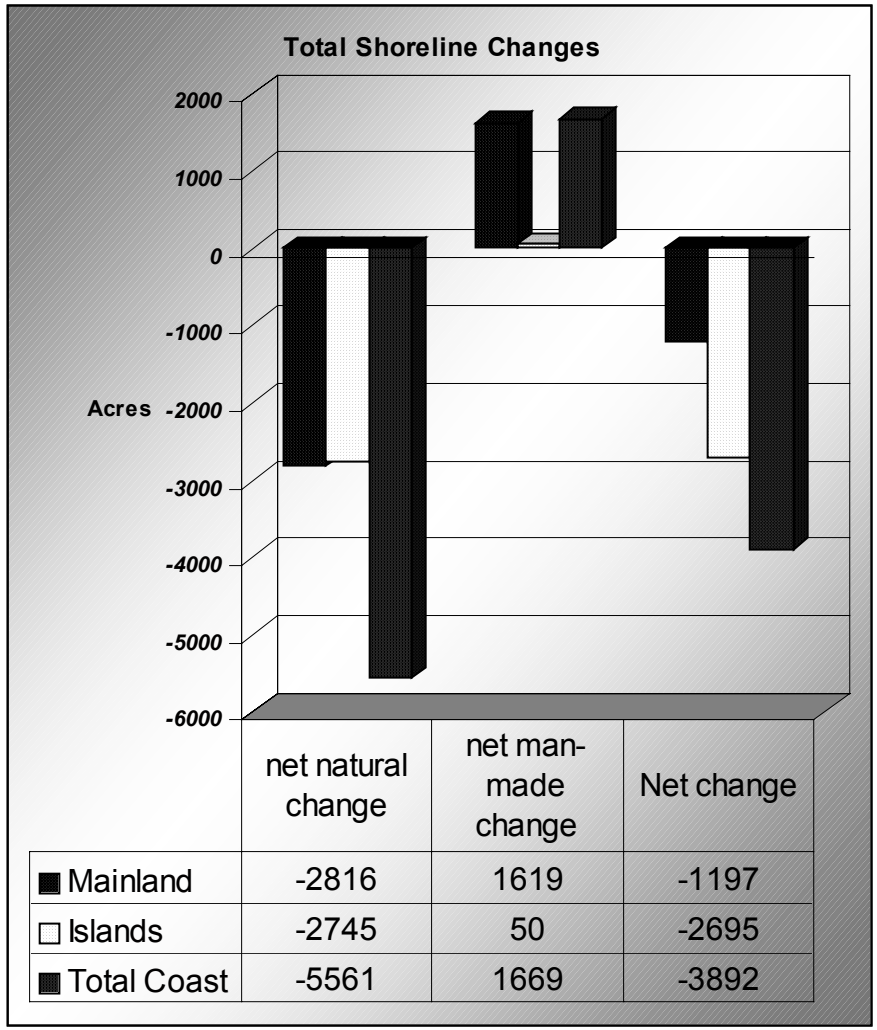
	Petit Bois	Horn	Ship	Cat	Sand
Gain	635	1252	451	163	50
Loss	-1404	-1863	-1083	-946	0
Net	-769	-611	-632	-783	50

Island Totals	Gain	Loss	Net
	2601	-5296	-2695

1850-1986 Coastal Shoreline Change - Totals



	Hancock	Harrison	Jackson
net natural change	-934	-272	-1610
net man-made change	-93	567	1145
Net change	-1027	295	-465



	net natural change	net man-made change	Net change
Mainland	-2816	1619	-1197
Islands	-2745	50	-2695
Total Coast	-5561	1669	-3892

Mainland Totals	net natural change	net man-made change	Net change
	-2816	1619	-1197

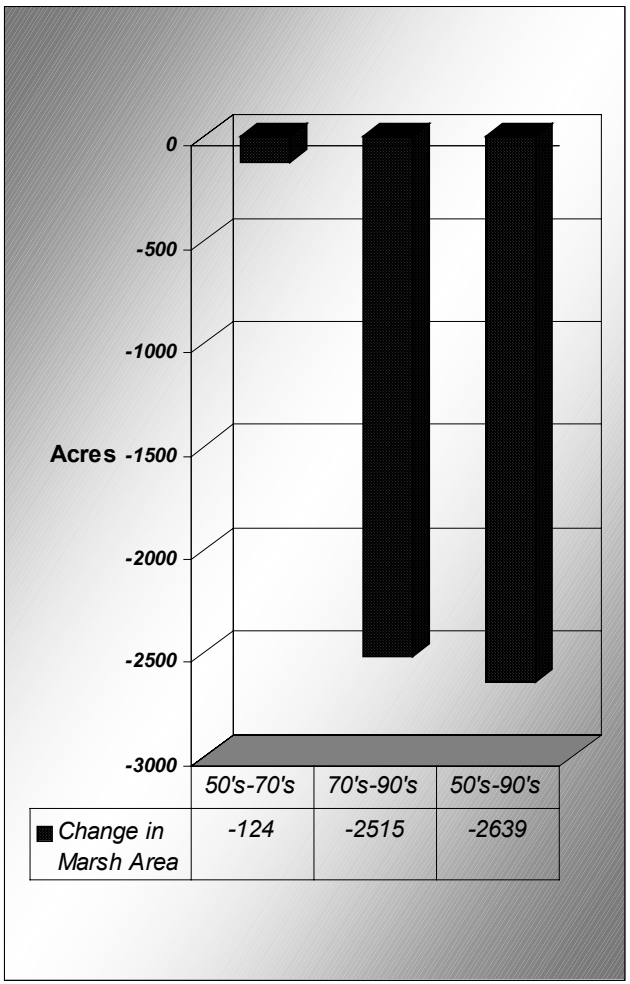
Total Coast	net natural change	net man-made change	Net change
	-5561	1669	-3892

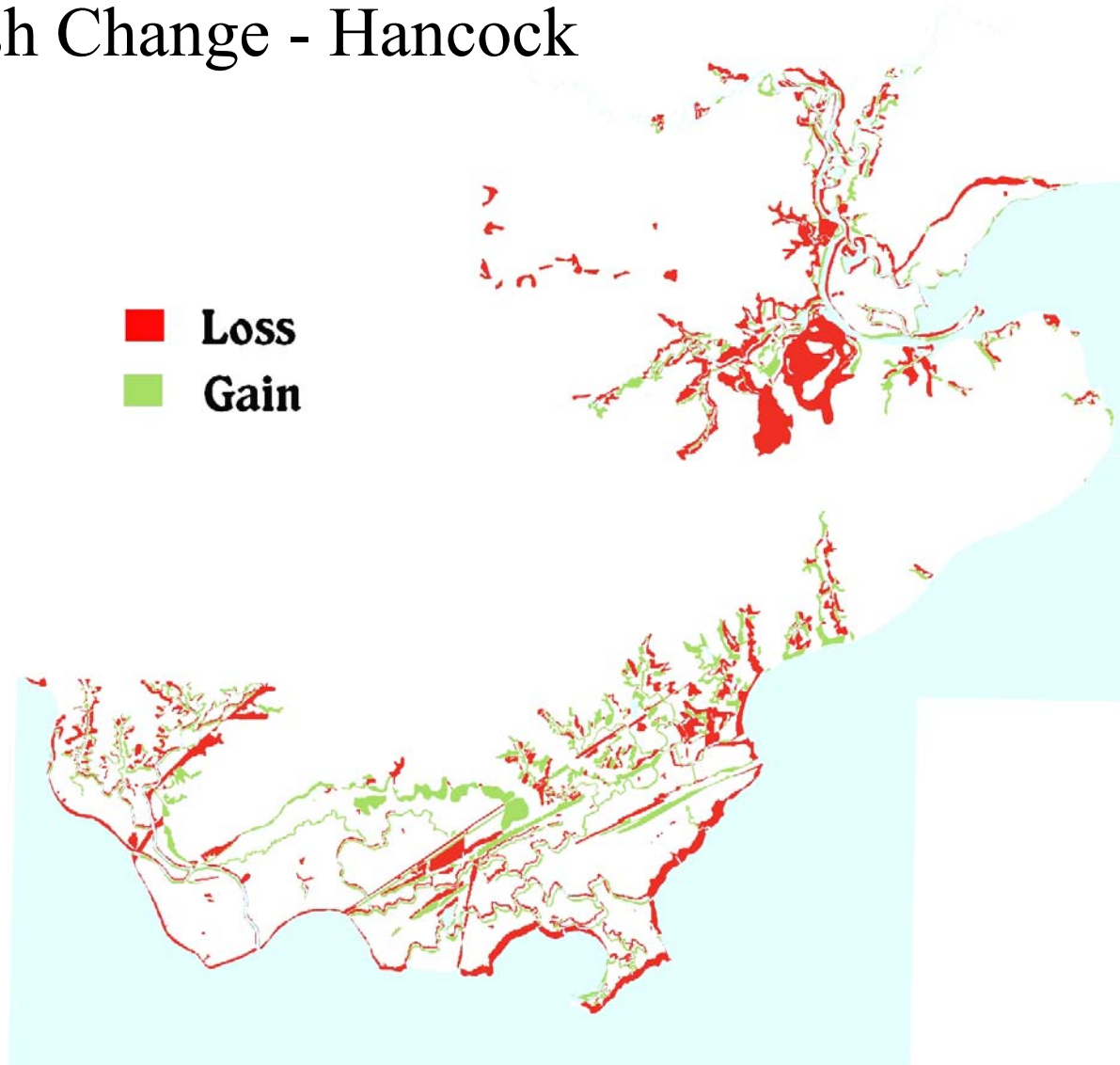
Marsh Change 1950-1992

- Less than 15 ft elevation
- Emphasis on tidal marsh
- Some non-tidal

Mainly wetlands south of I-10 considered

Marsh Change - Hancock



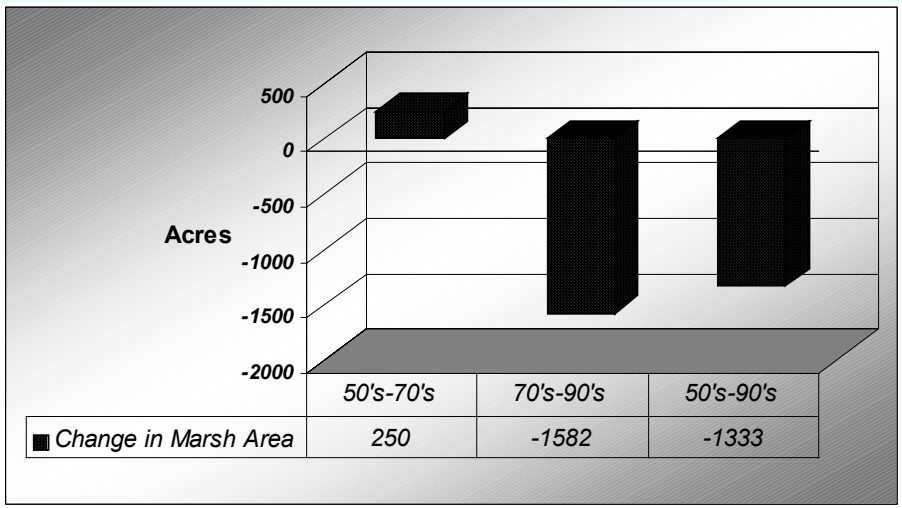


1950's = 23,825 acres

1990's = 21,186 acres

Total Marsh Loss = 2,639 acres

Marsh Change - Harrison

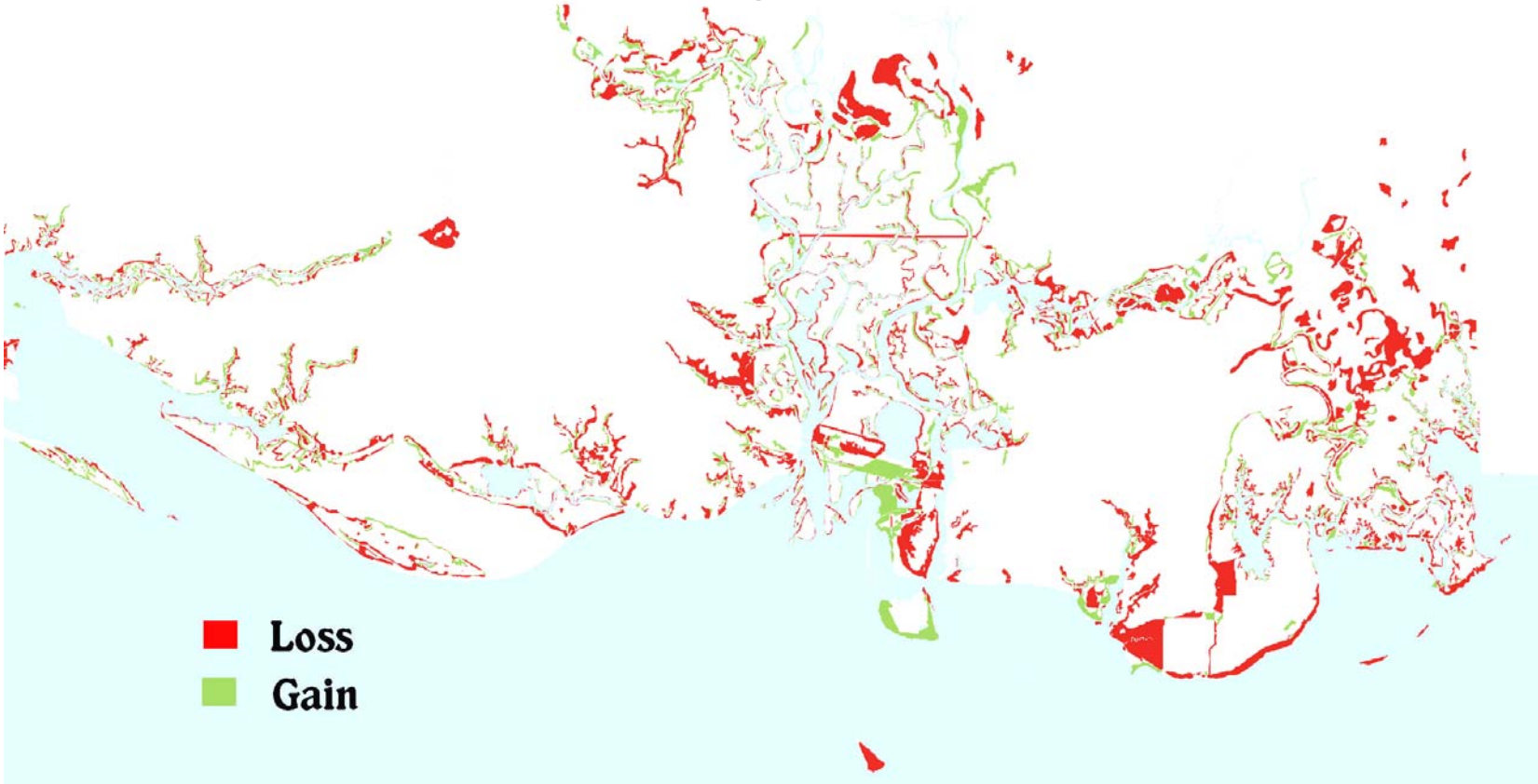


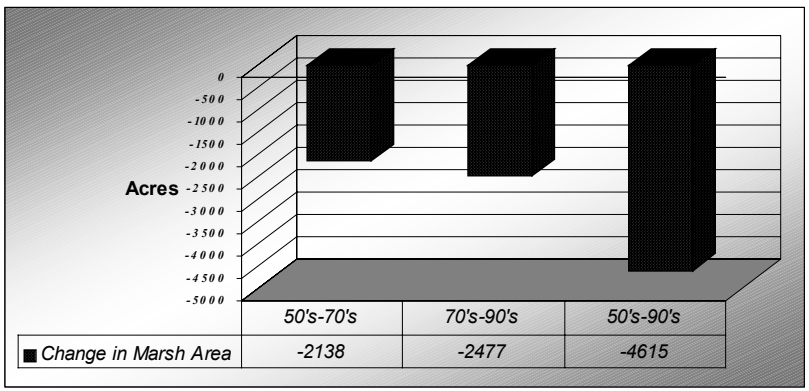
1950's = 7,168 acres

1990's = 5,836 acres

Total Marsh loss = 1,333 acres

Marsh Change – Jackson



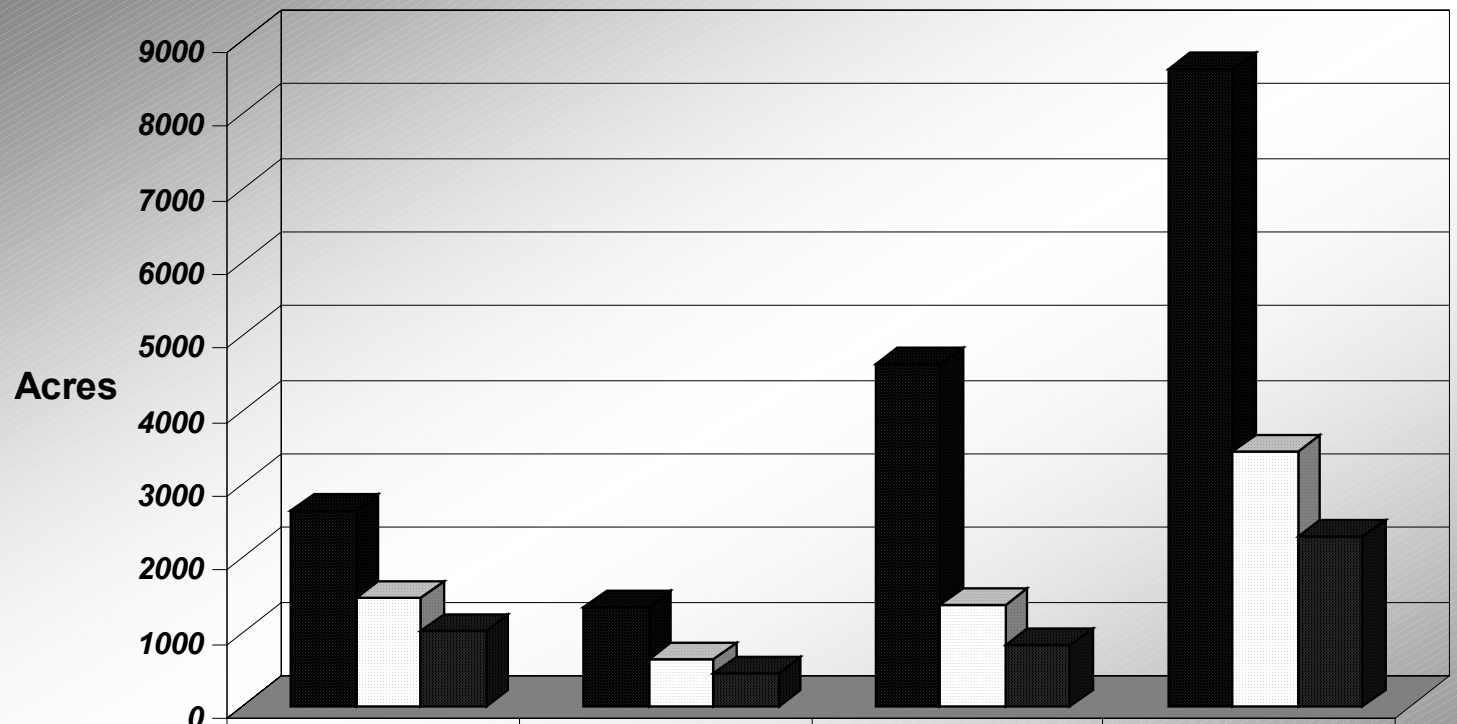


1950's = 36,005 acres

1990's = 31,390 acres

Total marsh loss = 4,615 acres

Marsh Loss Accounting



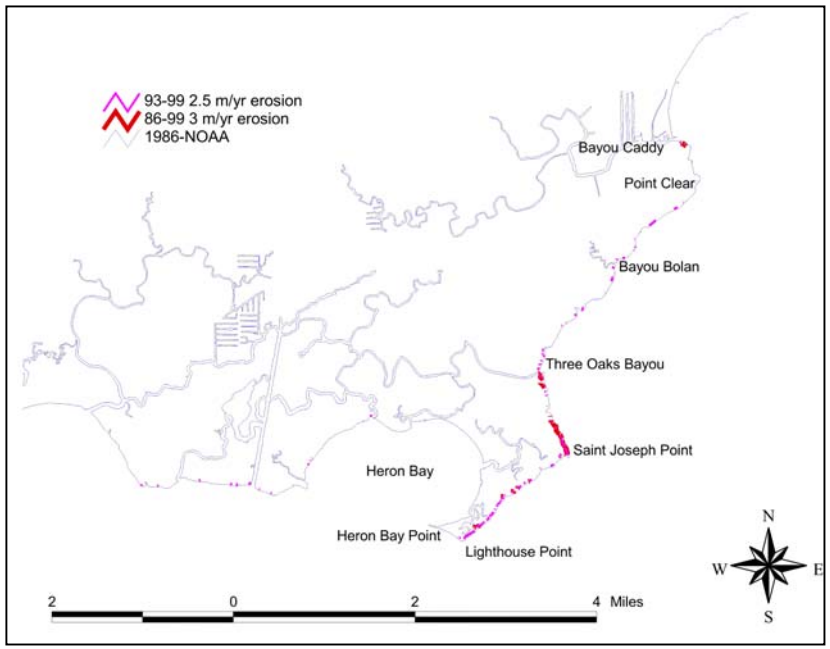
	Hancock Co.	Harrison Co.	Jackson Co.	Total
Marsh Loss	2640	1333	4615	8588
Marsh to Development	1441	624	1362	3427
Marsh to Water	1014	444	812	2270

1950's = 67,000 acres

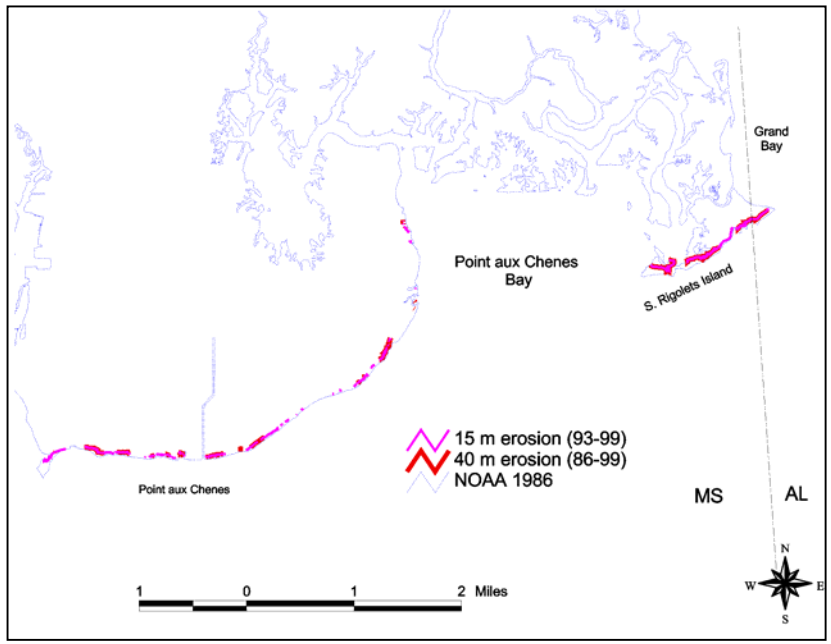
1990's = 58,500 acres

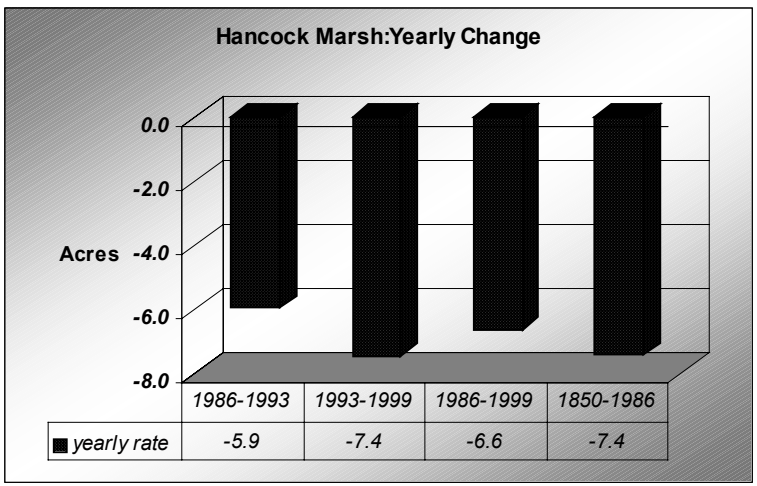
Marsh Shorelines – Recent

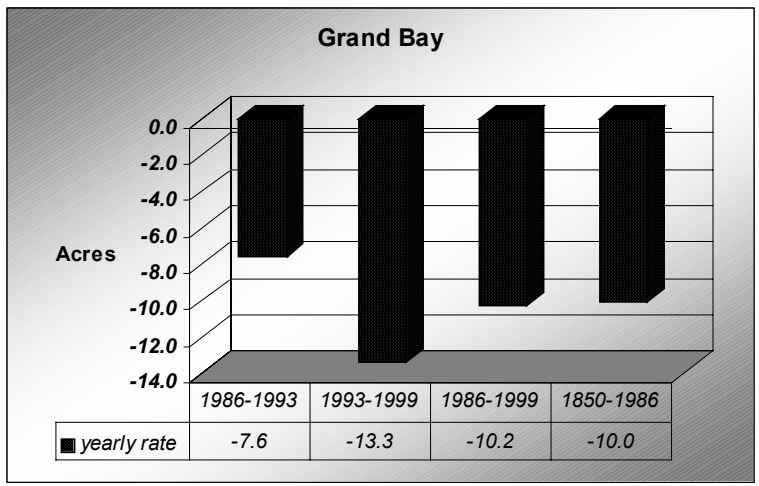
86-99 loss = 86 acres



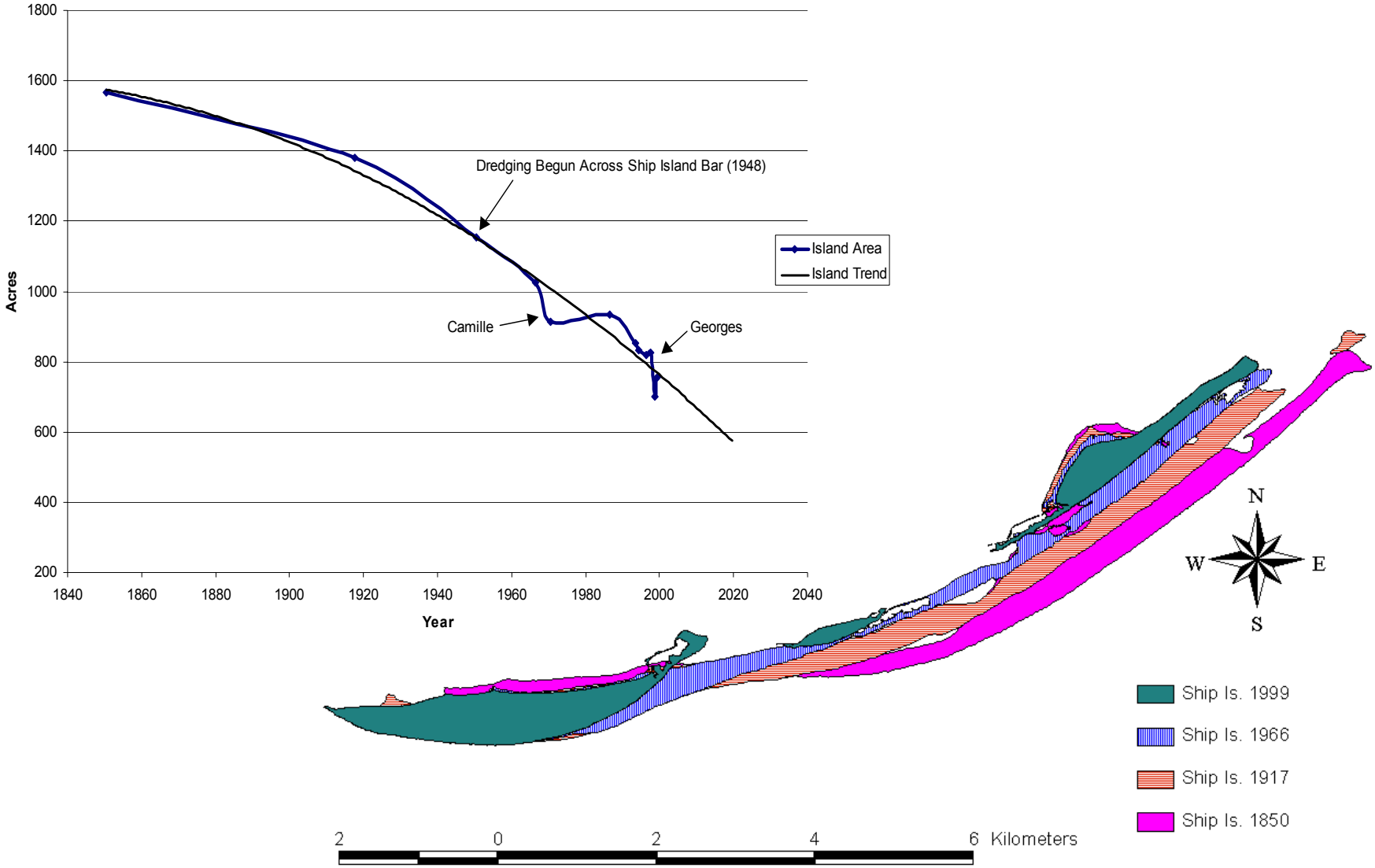
86-99 loss = 133 acres



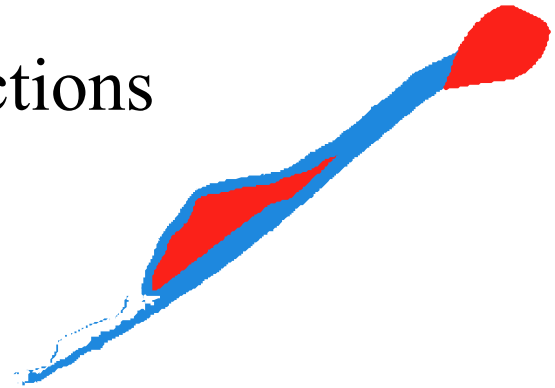


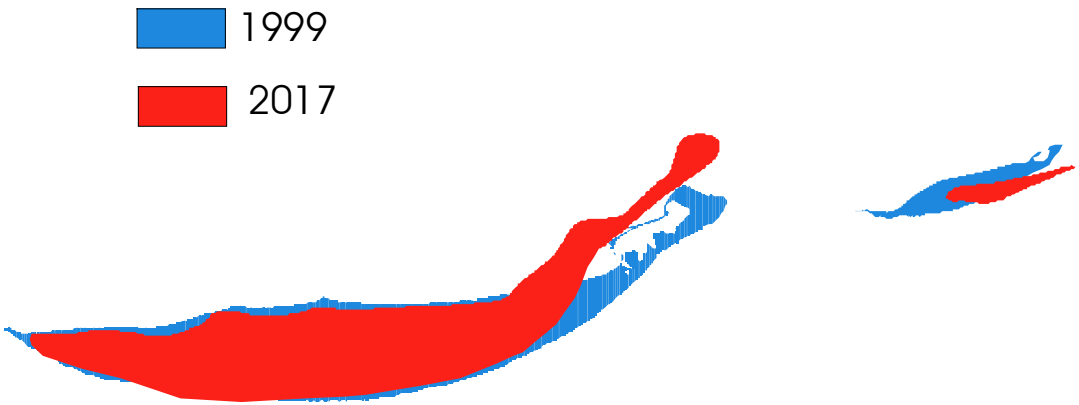


Ship Island Area Change 1850-1999



Ship Island – Future Predictions

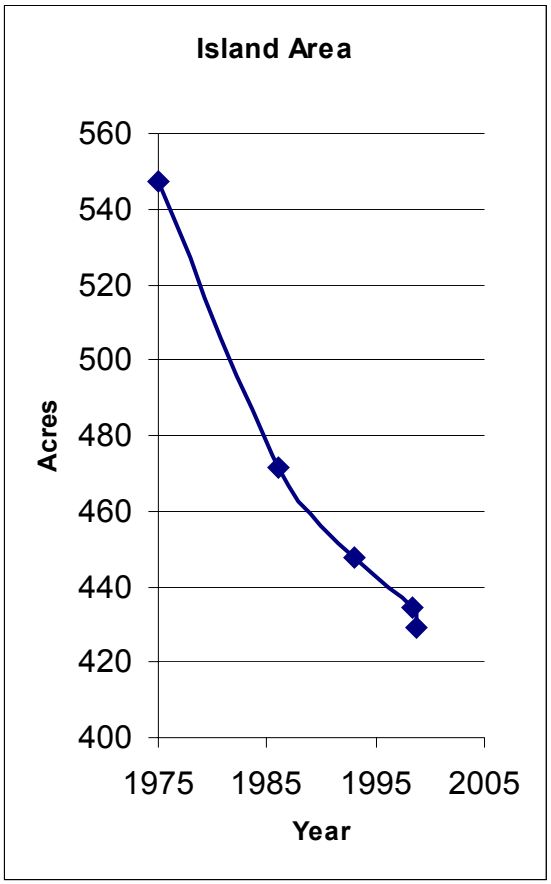


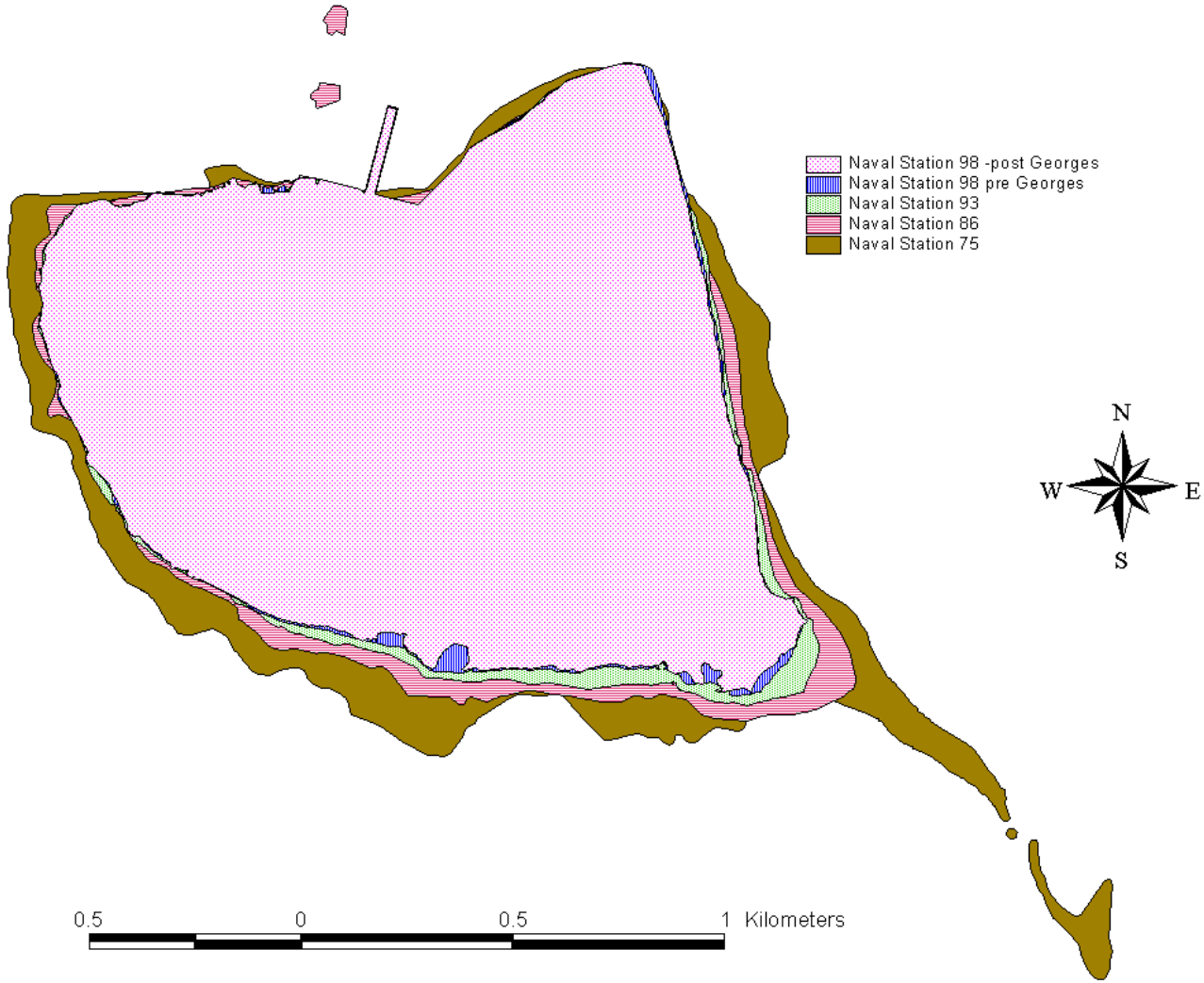


Shoreline configuration calculated using cross shore transects with 1986 to 1997 data

- Calculated 2017 area from cross island transects (1986-1997) = 611 acres
- Calculated 2017 area from long term area change (graph of 1850-1999) = 600 acres

Singing River Island





Total lost = 120 acres

Conclusions – Totals

- A **net** of about **4000** acres of coastal Mississippi south of US 90 has been lost since **1850**
  - Total natural change = **-5600** acres
  - Total man-made change = **+1700** acres.
- **9000+** acres of marsh south of I-10 (below 15 ft elevation) has been lost since **1950,** or about **15%** of total marsh in the area analyzed.
  - About **2700** acres to water.
  - About **3500** acres to development.
- Loss of coastal habitat continues today at rates similar to historic trends.
- Present rate of sea level rise will maintain coastal habitat loss trend, expected increases in sea level rise will heighten coastal loss.