OYSTER STOCK ASSESSMENT REPORT

ON THE PUBLIC SEED GROUNDS,
SEED RESERVATIONS, AND TONGING AREAS

2003 2003

Louisiana Department of Wildlife and Fisheries

Marine Fisheries Division

Oyster Data Report Series
No. 9
July, 2003

INTRODUCTION AND OVERVIEW

The oyster resource in Louisiana is one of the largest and most valuable in the nation. Its value is derived from both the economic benefits it provides to the state and the ecological benefits it provides to the estuarine environment. Due to Louisiana's vast coastal wetland area, ample habitat exists where oysters thrive under a variety of environmental conditions. The Department of Wildlife and Fisheries (LDWF) is charged with managing the oyster resource on the public grounds by closely monitoring the size and health of oysters on approximately 2 million acres of public water bottoms.

Oysters have been a part of the Louisiana economy for many years; starting from meager beginnings and growing into a multi-million dollar industry. In 2002, the dockside value of oysters totaled nearly 26.5 million dollars and harvest yielded over 13.4 million pounds of meat. Louisiana regularly leads the nation in the production of oysters and accounted for an average of 32% of the nation's oyster landings from 1997-2001 (Figure 1).

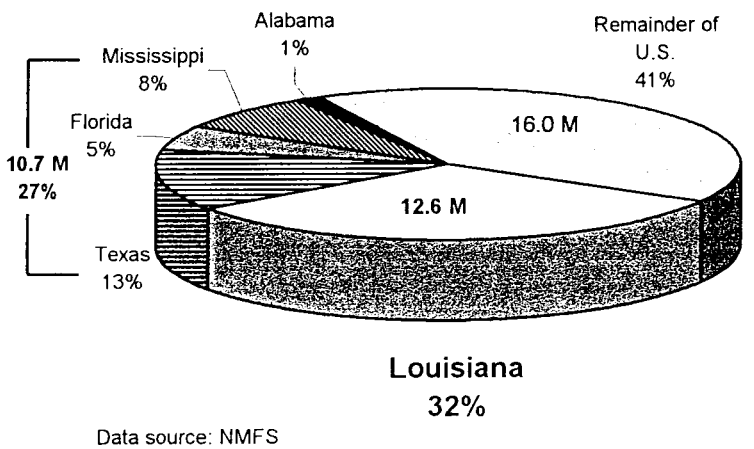


Figure 1. Average 1997 - 2001 oyster landings (all species combined, pounds of meat).

Oysters also play an important ecological role in the estuarine ecosystem. Oyster reefs provide the majority of hard substrate required by other sessile invertebrate species such as barnacles, bryozoans, tunicates, and anemones. Reefs are also utilized as shelter and forage habitat for many species of crabs, worms, fish, and meiofauna. Estuarine water quality can be affected as well by the filter-feeding activities of oysters.

Each summer, LDWF biologists from the Marine Fisheries Division perform quantitative evaluation of the oyster resource on the public oyster areas. This biological evaluation includes using SCUBA to collect replicate square meter samples from areas of each public seed ground, seed reservation, and tonging area. The public ground oyster season generally opens in mid-September and runs through March or April of the following year. Square-meter sampling is conducted each July in order to assess the stock size of the resource and to make recommendations to the Wildlife and Fisheries Commission for the setting of the oyster season. Although the public oyster areas are managed to provide seed oysters (< 3") for leaseholders to transplant to privately leased areas, the public reefs also yield a supply of sack oysters (≥ 3") that can be sold directly at market.

The Louisiana public ground oyster resource has remained at or above the four million barrel mark since 1992, but preliminary estimates show the stock size dropping to 3.8 million barrels in 2003. Stocks of seed oysters in 2003, however, have increased by roughly 75,000 barrels over 2002 levels. Sack oyster levels fell sharply from 3.8 million barrels in 2002 to 1.9 million barrels in 2003 (Figure 2).

The public oyster grounds are a strong contributor to overall Louisiana oyster landings each year and >50% of all Louisiana oyster landings came from public grounds in 2002. This is in sharp contrast to the trend from 1970 – 1992 when the majority of Louisiana oyster landings came from private reefs. Since 1992, however, the public ground stock size has increased and landings from the public grounds increased as well (Figure 3).

The following report includes both biological and historical production data from each coastal study area (CSA) in Louisiana. Biological data was generated from quantitative square-meter sampling (see above) and production data was generated from boarding runs and trip ticket information. Questions and/or comments can be directed to individual CSA supervisors, Patrick Banks at (225) 765-2370, or Marty Bourgeois at (225) 765-2401.

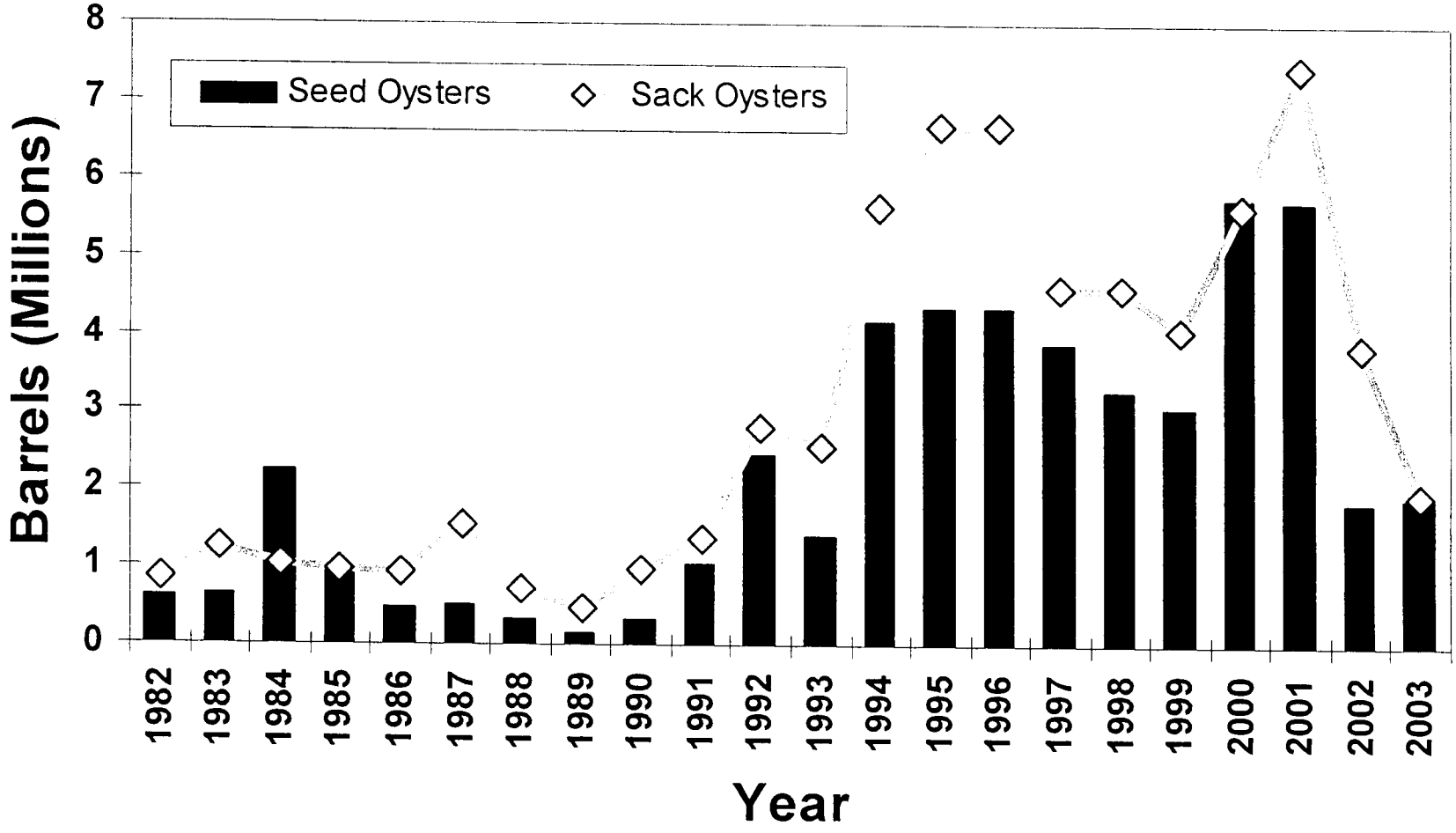


Figure 2. Historical Louisiana oyster stock size (estimated based on square meter sample analysis).

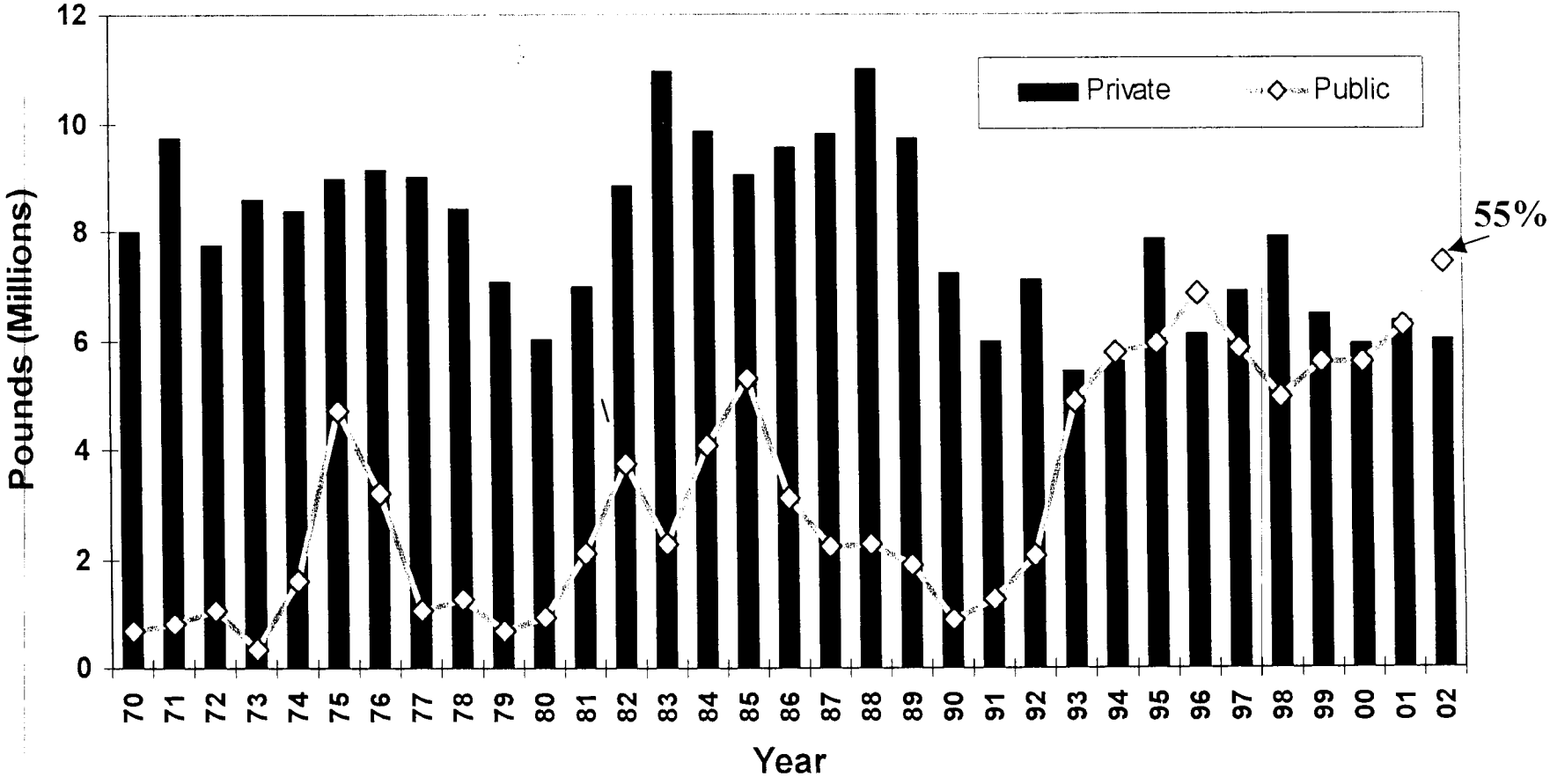
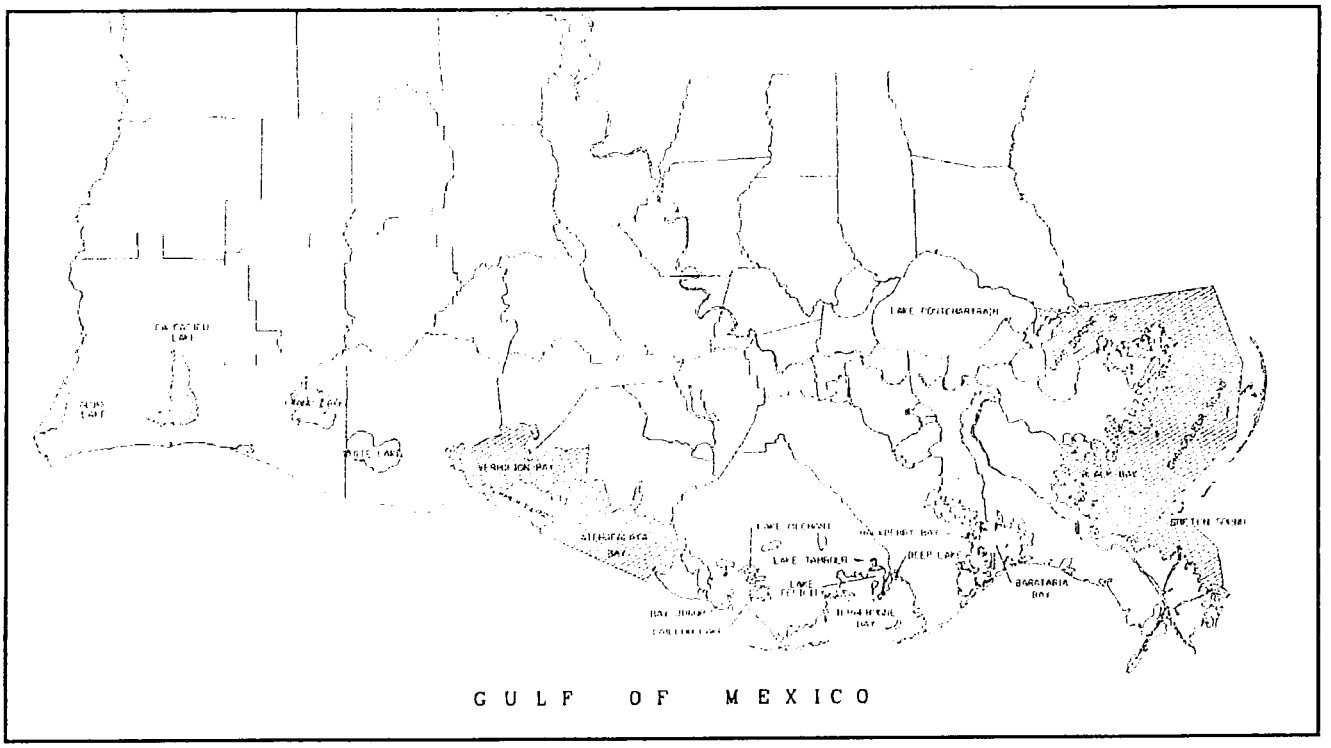


Figure 3. Historical Louisiana oyster landings (NMFS and LDWF data).

Public Oyster Areas



Public Seed Grounds

Lake Borgne
Chandeleur/Breton Sound
(Primary Seed Grounds)
Barataria Bay
Deep Lake
Lake Chien
Lake Felicity
Lake Tambour
Lake Mechant
Vermilion/Cote Blanche/Atchafalaya Bays

Public Seed Reservations

Bay Gardene
Hackberry Bay
Sister (Caillou) Lake
Bay Junop

Public Tonging Areas

Calcasieu Lake
Sabine Lake

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* Seed grounds are designated by the Wildlife and Fisheries Commission. Seed reservations and tonging areas are designated by the state legislature.

CSA I

OYSTER AVAILABILITY AND SYNOPSIS OF RELATED ACTIVITIES IN COASTAL STUDY AREA I PUBLIC SEED GROUNDS IN THE LAKE BORGNE, MISSISSIPPI SOUND AND BILOXI MARSH VICINITY

THOMAS J. ROWLEY, CARL F. BRITT AND JOHN F. BURDON

On July 10, square meter field sampling associated with the 2003 oyster stock assessment of the Public Seed Grounds in Coastal Study Area I was completed. Sampling locations were as follows: Hospital Wall, Little Grassy Island, Half Moon Island, Petit Pass, Three Mile Pass, Grand Pass, Cabbage Reef, Turkey Bayou, Martin Island, Holmes Island and the 2000 Shell Plant (South of Half Moon Island). Two replicate square meter samples were taken at each of the sites. An average of the two samples at each site was utilized to determine the market and seed oyster stock based on predetermined reef acreage.

The 2003 stock assessment conducted in Coastal Study Area I indicated that quantities of seed and sack oysters will approach 1.3 million barrels on the Public Seed Grounds. Utilizing information from the 2003 square meter samples, current stocks of market size "sack" oysters and seed oysters available in Coastal Study Area I are 597,476 barrels of sack oysters and 685,076 barrels of seed oysters. Based on the square meter samples for the past ten years, the combined population of sack and seed oysters most closely resembles that of 1995. Besides 1995, seed oyster production in 1997 and 1999 are quite similar to the 2003 population. Market oyster availability for the 2003-2004 season appears to be just slightly less than that of 1995 and just above that of 2000.

On July 7, 2003, samples consisting of both sack and seed size oysters from Three Mile Pass and Cabbage Reef were provided to Dr. John Supan (LSU Cooperative Extension Service) for "Dermo" (Perkinsus marinus) analysis. Those results will be provided in a forthcoming report.

Boarding reports indicated that there was a considerable harvest of seed oysters, principally from the Cabbage Reef / Grand Pass area, from the beginning of the season through the second week in November. Following the second week in November, harvesters fished almost exclusively for market oysters with only a couple of boats procuring seed oysters just prior to the Public seed Grounds closing. Market oysters were removed from the Public Seed Grounds in steady quantities throughout the season except for a three-week period as a result of Tropical Storm Isidore and Hurricane Lili.

Spat set and/or survival continues to be low as was reported the past two years. Survival of spat in some areas of the Public Seed Grounds was likely influenced by low salinity water. Additionally, where large amounts of silt-laden waters were introduced, considerable mortality occurred due to overburden or abrasion. In 2002, Tropical Storm Isidore (Sept.) and Hurricane Lilly (Oct.) followed by Tropical Storm Bill (June) in 2003 contributed to the mortality of many spat and juvenile oysters. Sediment overburden and abrasion caused by wave action, tides and currents likely had a negative effect on young oysters.

Predators of all types are, as they should be, also a likely component in the reduction of oyster populations of all sizes. The oyster drill, *Stamonita* (= *Thais*) *haemostoma* was obtained exclusively from samples in the Cabbage Reef / Grand Pass vicinity. The presence of oyster drills in this northeastern portion of the Public Seed Grounds indicates that salinities in this area have remained at 10 ppt or above since water temperatures elevated in the spring.

An abundant population of adult hooked mussels (*Ischadium recurvum*) in the area of discharge from the East Pearl River near Little Grassy and Half Moon Islands has become well established. Due to the distribution of fresh water from the West Pearl River, a conical area of distribution consisting of mostly juvenile hooked mussel (5-20mm) extends from the island areas to Petit Pass on the west to Turkey Bayou on the east with a southward protrusion into Three Mile Pass. The southern portion of Lake Borgne below a line from Alligator Point across to point Aux Marchettes also has an extensive population of hooked mussels.

Hooked mussels create several outstanding problems for the oyster industry, especially when found in extreme quantities. These problems include:

1. They reduce the available area for juvenile oyster establishment (spat set).
2. They compete for and reduce the necessary components required for oyster metabolism and growth.
3. They encumber the oyster harvester with additional time and labor expenses to process.

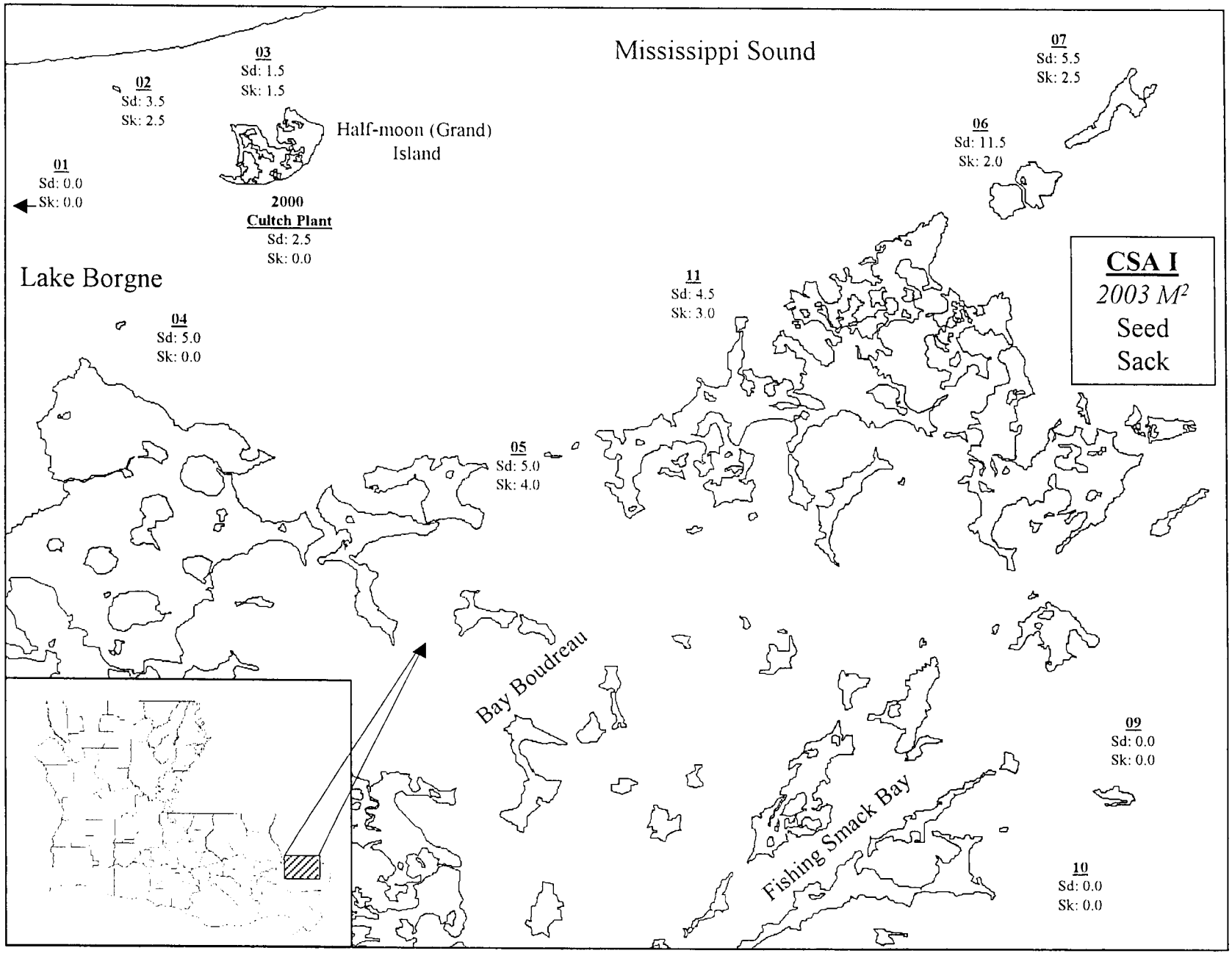

Mississippi Sound
03
Sd: 1.5
Sk: 1.5
02
Sd: 3.5
Sk: 2.5
Half-moon (Grand) Island
01
Sd: 0.0
Sk: 0.0
2000
Cultch Plant
Sd: 2.5
Sk: 0.0
07
Sd: 5.5
Sk: 2.5
06
Sd: 11.5
Sk: 2.0
Lake Borgne
11
Sd: 4.5
Sk: 3.0
CSA I
2003 M²
Seed
Sack
04
Sd: 5.0
Sk: 0.0
05
Sd: 5.0
Sk: 4.0
Bay Boudreau
09
Sd: 0.0
Sk: 0.0
Fishing Smack Bay
10
Sd: 0.0
Sk: 0.0

Table 1. 2003 oyster availability for Coastal Study Area I.

Meter² Station	*Reef Acreage*	*# Meter²*	*# Seed Oysters Sampled*	*# Sack Oysters Sampled*	*Barrels of Seed Available*	*Barrels of Sack Available*
01	376.07	1,521,955.29	0	0	0	0
02			3.5	2.5		
03			1.5	1.5		
04			5.0	0		
02 – 04	6850.17	27,722,638.00	10.0	4.0	385,036	308,029
05	3058.65	12,378,356.55	5.0	4.0	85,960	137,537
06			11.5	2.0		
07			5.0	2.5		
			N/A	N/A		
11			4.5	3.0		
06 – 11	1801.76	7,291,722.72	21.0	7.5	212,675	151,910
09			0	0		
10			0	0		
09 – 10	4155.70	16,818,117.90	0	0	0	0
Lake Pontchartrain	631.27	2,554,749.69	0	0	0	0
2000 Cultch Plant	100.00	404,700	2.5	0	1,405	0
				TOTALS	**685,076**	**597,476**

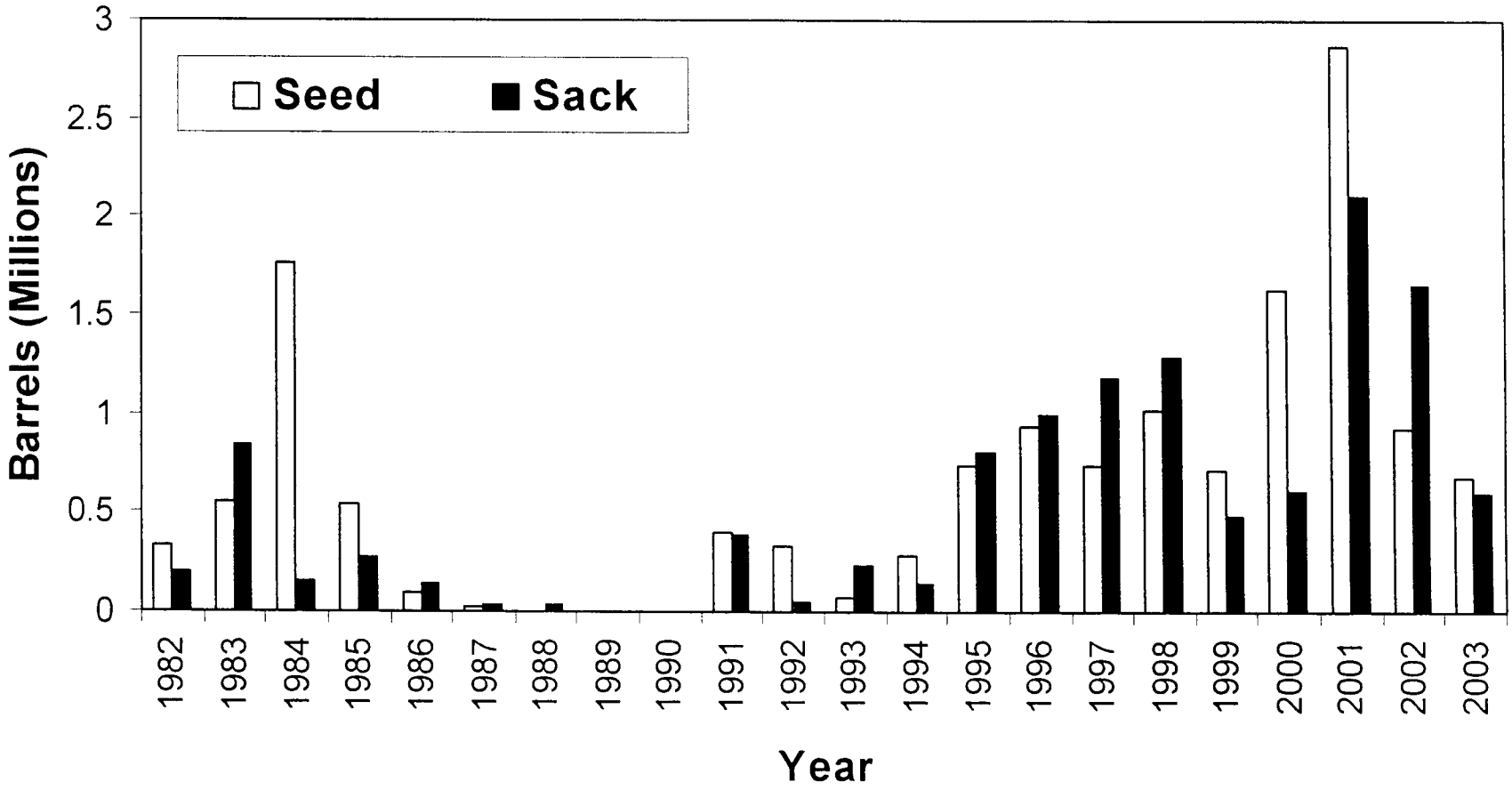


Figure 1. Historical Coastal Study Area I oyster stock size (estimated based on square meter sample analysis).

CSA II

State of Louisiana

DEPARTMENT OF WILDLIFE AND FISHERIES

1600 CANAL STREET
New Orleans, LA 70112
(504) 568-5685

M.J. "Mike" Foster
Governor

James H. Jenkins, Jr.
Secretary

July 21, 2003

M E M O R A N D U M

TO: Patrick Banks, Biologist Supervisor

FROM: Clarence Luquet, Biologist Supervisor
Coastal Study Area II

SUBJECT: CSA II Meter Square Samples ***2003***

Personnel from Coastal Study Area II completed the 2003 meter square sampling project on July 10, 2003. A total of 29 stations were sampled from Bay Gardene and Northern Black Bay to Breton Sound. We found 799,454 barrels of seed oysters and 567,018 barrels of sack oysters for a total of 1,366,472 barrels overall.

The overall availability is down 13 percent from last year, and down 59% of last 10 years' average. Relative to last year, the stock of seed oysters is **up** by 198,463 barrels (**25%**), while sack oyster availability is **down** by 401,726 barrels (**41.5%**). Seed oyster availability is still well below the average for the 1990's: down 60 % of the 10-year average. Sack oysters are also below the average of the 90's (down 56 %).

Ample seed oysters may still be found on Bay Crabe and Bay Gardene reefs, and were also abundant on the California Bay reefs. Sack oyster numbers are down but they are available on the same reefs as the majority of seed. The decrease in population is likely due to several factors including high fishing effort in CSA 2 last season, Dermo, and predation (*Stramonita* were found at some of our seaward reefs).

The results of this year's Dermo sampling are not yet available.

Mussels were encountered at all but two of our stations. Though they were common at about half of the area reefs, the vast majority were juveniles and, with some luck, will die off prior to the fall season opening. These juveniles were unfortunately most common on the same California Bay area reefs, and southern Black Bay areas, where the majority of our oyster resource remains.

Mortalities (recent) in SEED and SACK oysters averaged less than 5 percent across the area.

Young spat (less than one month old) were present at ***only*** *7* of our 29 stations. The highest occurrences were in Bay Gardene and Lake Fortuna. Though this is one of the poorest spring spat sets that I have observed, and we are disappointed in these numbers, there was also some smaller scattered sets, and we remain hopeful for a good late summer/fall set.

Average numbers of spat and mussels are reported on the stock assessment worksheet as an indicator of potential for the upcoming season. These are normally subject to high mortalities at those juvenile stages.

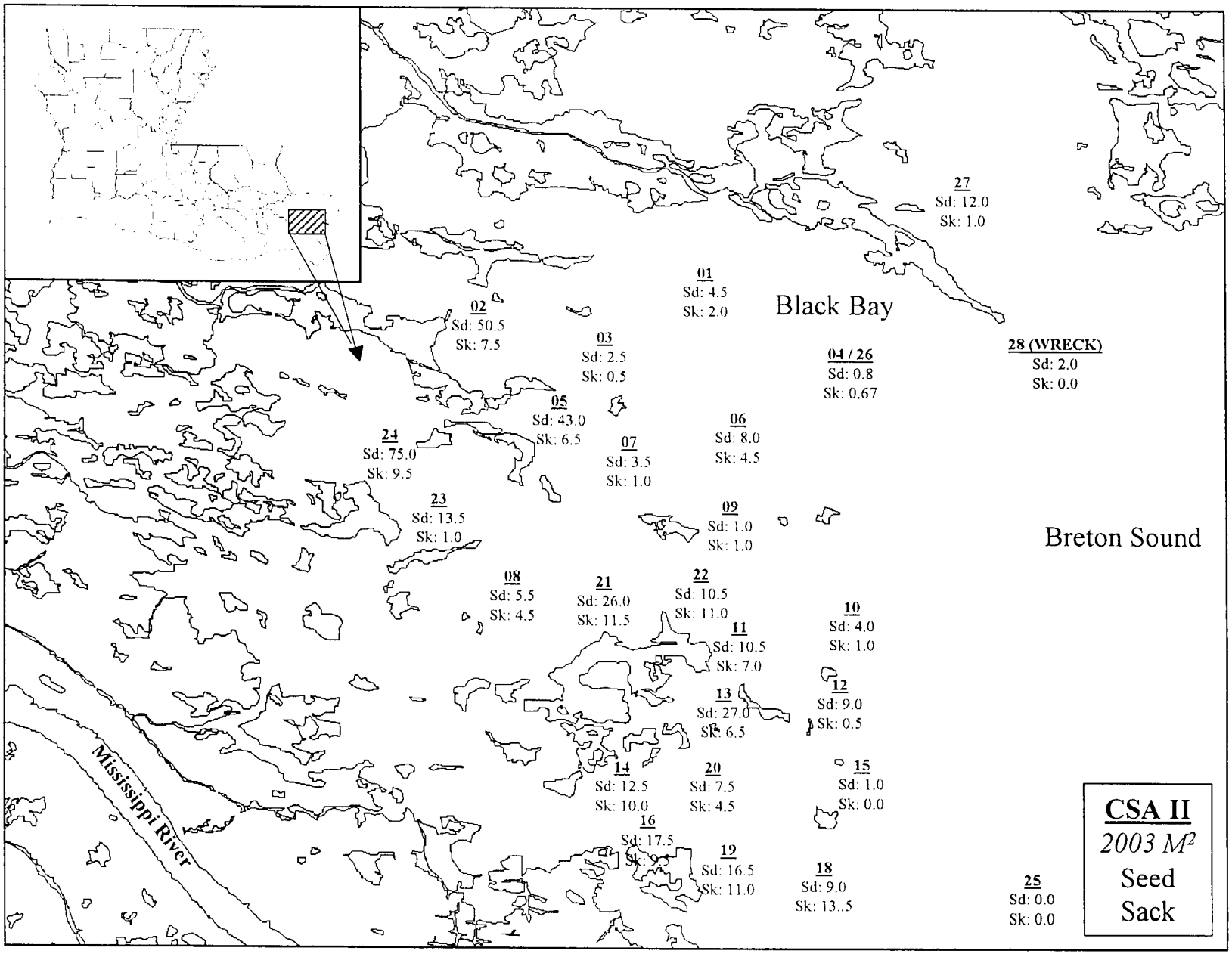

Black Bay
Breton Sound
Mississippi River
01
Sd: 4.5
Sk: 2.0
02
Sd: 50.5
Sk: 7.5
03
Sd: 2.5
Sk: 0.5
04 / 26
Sd: 0.8
Sk: 0.67
05
Sd: 43.0
Sk: 6.5
06
Sd: 8.0
Sk: 4.5
07
Sd: 3.5
Sk: 1.0
08
Sd: 5.5
Sk: 4.5
09
Sd: 1.0
Sk: 1.0
10
Sd: 4.0
Sk: 1.0
11
Sd: 10.5
Sk: 7.0
12
Sd: 9.0
Sk: 0.5
13
Sd: 27.0
Sk: 6.5
14
Sd: 12.5
Sk: 10.0
15
Sd: 1.0
Sk: 0.0
16
Sd: 17.5
Sk: 7.5
18
Sd: 9.0
Sk: 13..5
19
Sd: 16.5
Sk: 11.0
20
Sd: 7.5
Sk: 4.5
21
Sd: 26.0
Sk: 11.5
22
Sd: 10.5
Sk: 11.0
23
Sd: 13.5
Sk: 1.0
24
Sd: 75.0
Sk: 9.5
25
Sd: 0.0
Sk: 0.0
27
Sd: 12.0
Sk: 1.0
28 (WRECK)
Sd: 2.0
Sk: 0.0
CSA II
2003 M²
Seed
Sack

Table 1. 2003 Square meter sample results for Coastal Study Area II.

stations	grids	acres	sq. meters	avg per frame seed	avg per frame sack	BBLS SEED	BBLS SACK	mussels	spat	drills present
1	Snake	506	2,047,782	4.5	2	12,799	11,377	459J	0	
2	Jessie	59	283,773	50.5	7.5	19,904	5,912	17.0A	1	
3	N. Lonesome	896	3,626,112	2.5	0.5	12,591	5,036	145J 5.5A	0	
5	Bayou Lost	118	477,546	43	6.5	28,520	8,622	17.5A	3.5	
6	Lonesome	716	2,897,652	8	4.5	32,196	36,221	1,825J	0	
7	Black Bay	301	1,218,147	3.5	1	5,922	3,384	425J	0.5	
8	W. Bay Crabe	501	2,027,547	5.5	4.5	15,488	25,344	15J 7.0A	0	
9	Stone	461	1,865,667	1	1	2,591	5,182	1,855J	0	yes
10	S. Black Bay	145	586,815	4	1	3,260	1,630	21,725J	0	
11	Elephant	339	1,371,933	10.5	7	20,007	26,676	1.0A	0	
12	Curfew	425	1,719,975	9	0.5	21,500	2,389	6,161J	0	yes
13	N. California	109	441,123	27	6.5	16,542	7,965	80J 31.5A	0	
14	California	7	28,329	12.5	10	492	787	127.5J 21.5A	0	
16	Sunrise	174	704,178	17.5	9.5	17,115	18,582	950J 20A	0	
17 SKIP		659	2,666,973			private leases discontinued				
19	Mangrove	937	3,792,039	16.5	11	86,901	115,868	4,895J 32.5A	0	
20	W. Pelican	293	1,185,771	7.5	4.5	12,352	14,822	13,750J 10A	0	*Stylochus*
21	Bay Crabe	659	2,666,973	26	11.5	96,307	85,195	43J	0	
22	E. Bay Crabe	122	493,734	10.5	11	7,200	15,086	336J 60A	0	
23	E. Gardene	28	113,316	13.5	1	2,125	315	14.5J 4.0A	7.5	
24	Bay Gardene	69	279,243	75	9.5	29,088	7,369	7.5J 26A	8	
4,26	N. Black Bay	315	1,274,805	0.8	0.67	1,470	2,373	99.3J	0.3	
15	Telegraph	127	513,969	1	0	714	0	18,320J	0	
18	E. Pelican	1,528	3,164,754	9	13.5	39,559	118,678	9,720J	0	
26 SKIP	see 4,26					combined data				
25	Battledore	1419	5,742,693	0	0	0	0	0	0	yes
27	L Fortuna	4288	17,353,536	12	1	289,226	48,204	17.5J	9	
28	Wreck	2276	9,210,972	2	0	25,586	0	6,275J	0	yes
Sub Total						**799,454**	**567,018**			
ALL TOTAL						***1,366,472***				

Notes : Mussel numbers are an indication of their expanded prevalence in our area but are mostly juveniles
Juvenile mussels are an estimated number per meter square (from allaquot) followed by a "J" = juvenile
Adults >15mm are listed as a number followed by the letter "A"

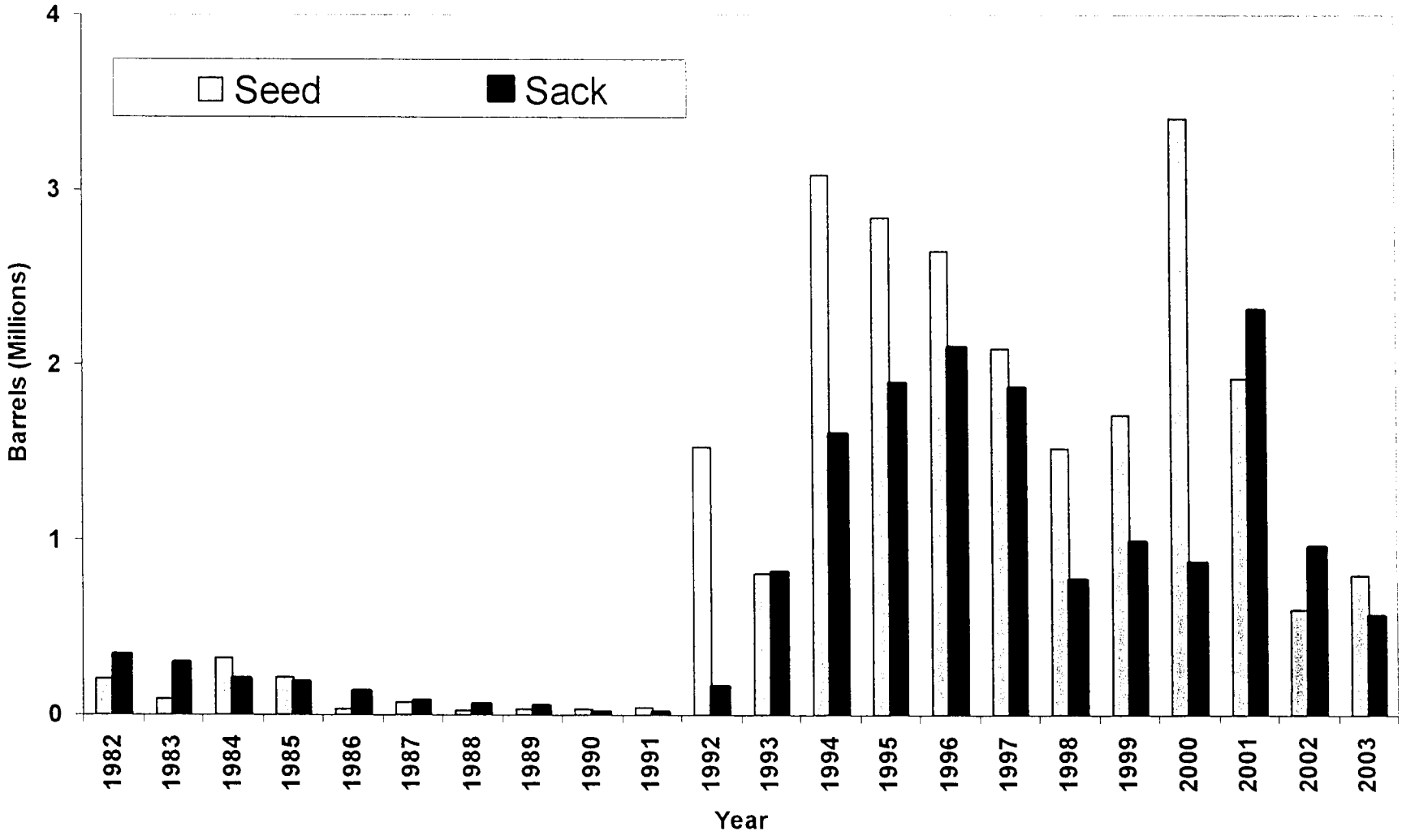


Figure 1. Historical Coastal Study Area II oyster stock size (estimated based on square meter sample analysis).

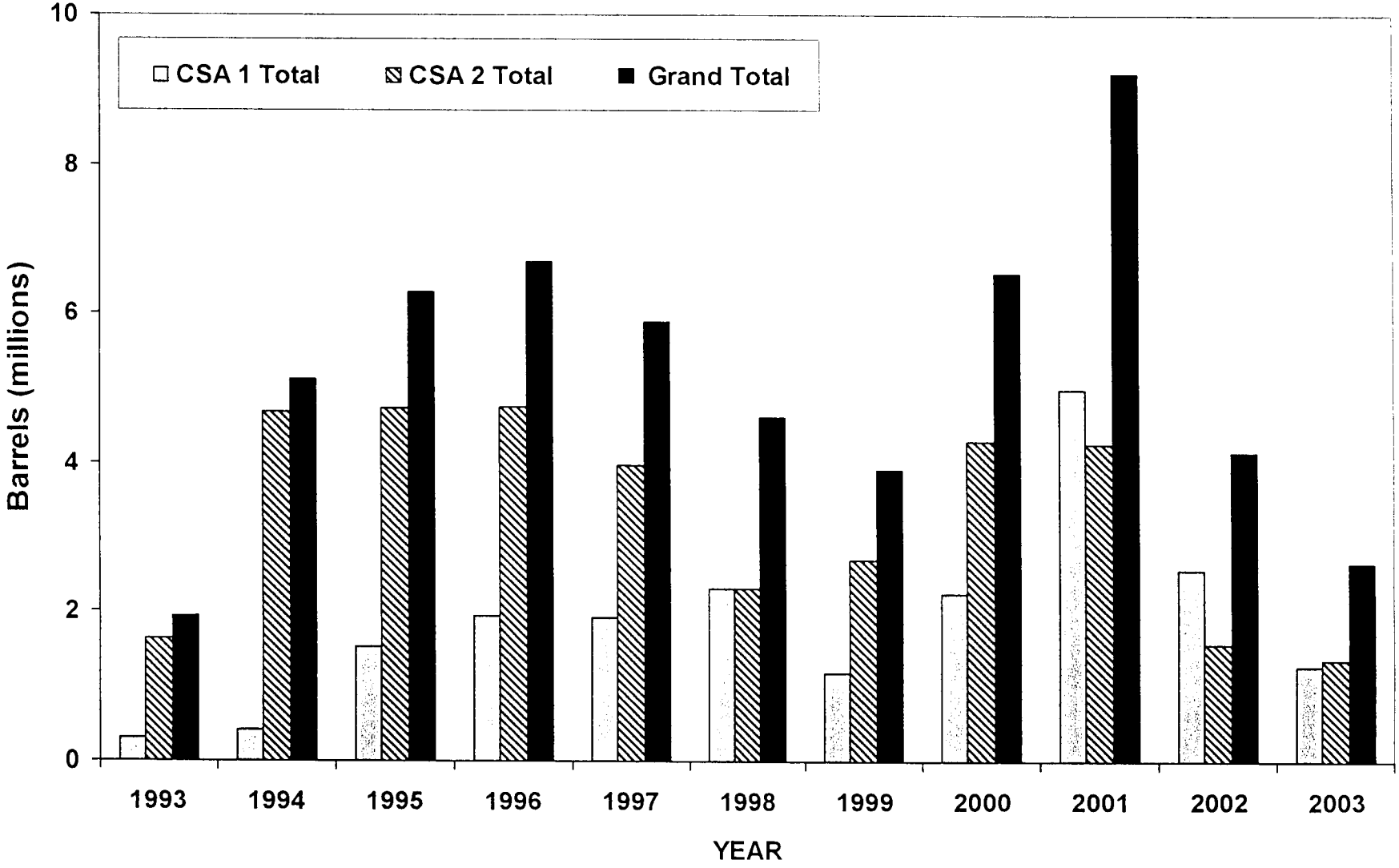


Figure 2. Oyster availability on public grounds east of the Mississippi River (seed and sack combined, estimated based on square meter sample analysis).

State of Louisiana

James H. Jenkins, Jr.
Secretary

Department of Wildlife & Fisheries
Lyle S. St. Amant Marine Laboratory
P.O. Box 38
Grand Isle, LA 70358
(985) 568-7620

M.J. "Mike" Foster, Jr.
Governor

Date: **July 17, 2003**

To: **Patrick Banks, Biologist Supervisor**

From: **Jason Adriance, CSA - 3**

Re: **Hackberry Bay Public Oyster Seed Reservation Meter Square Samples**

Meter square oyster samples were on collected July 10, 2003. Samples were taken at three stations (upper, middle, and lower) with one replicate at each site (Figure 1). Oysters were measured in 5 - mm size classes, averaged for each class, and divided into groups of spat, seed, and sack oysters (Figure 2). Spat oysters, which measured less than 25mm, averaged 8.0 per m^2. This number was lower than the previous seven years, but higher than last year (Figure 3). Seed oysters, which measured 25 mm to less than 75 mm, averaged 1.0 per m^2. This number is well below average for the past seven years. Sack oysters, which measured 75 mm or greater, averaged 5.0 per m^2. This number is close to average for the past seven years. Oysters per m^2 were extrapolated for 5.938 hectares (14.7 acres) of reef. The results were 82.5 barrels of seed oysters and 1649.4 sacks or 824.7 barrels of marketable oysters (Table 1).

On July 8, 2003, oysters were collected for Dr. John Supan (L.S.U. Cooperative Extension Service) from the middle Hackberry station with a dredge. Sack and seed oysters were divided, and an analysis for *Perkinsus marinus* (Dermo) was preformed. Results of the analysis are pending.

Hooked mussels per square meter averaged 25.3, and increase over last year.

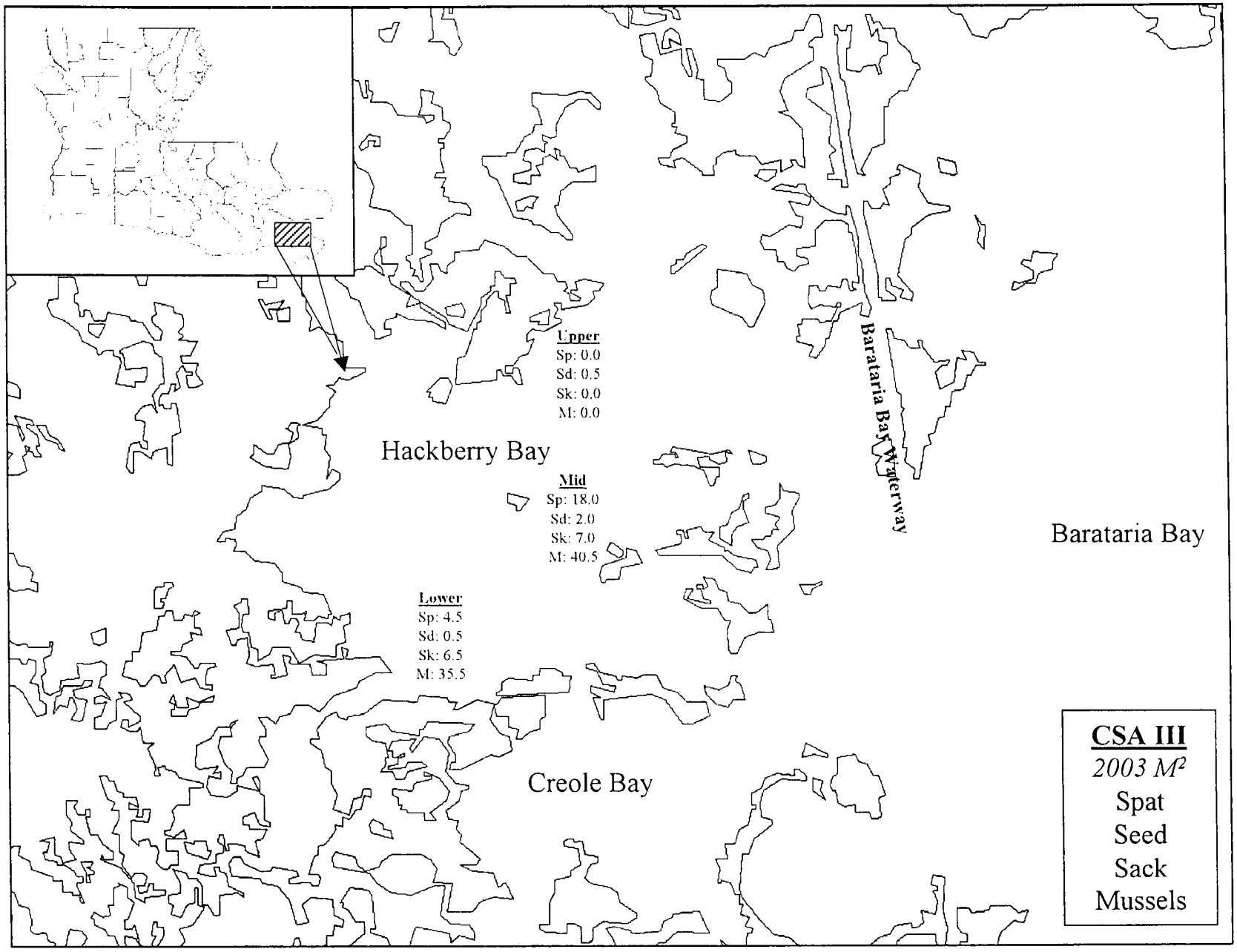

Upper
Sp: 0.0
Sd: 0.5
Sk: 0.0
M: 0.0
Hackberry Bay
Mid
Sp: 18.0
Sd: 2.0
Sk: 7.0
M: 40.5
Lower
Sp: 4.5
Sd: 0.5
Sk: 6.5
M: 35.5
Barataria Bay Waterway
Barataria Bay
Creole Bay
CSA III
2003 M²
Spat
Seed
Sack
Mussels

Figure 2

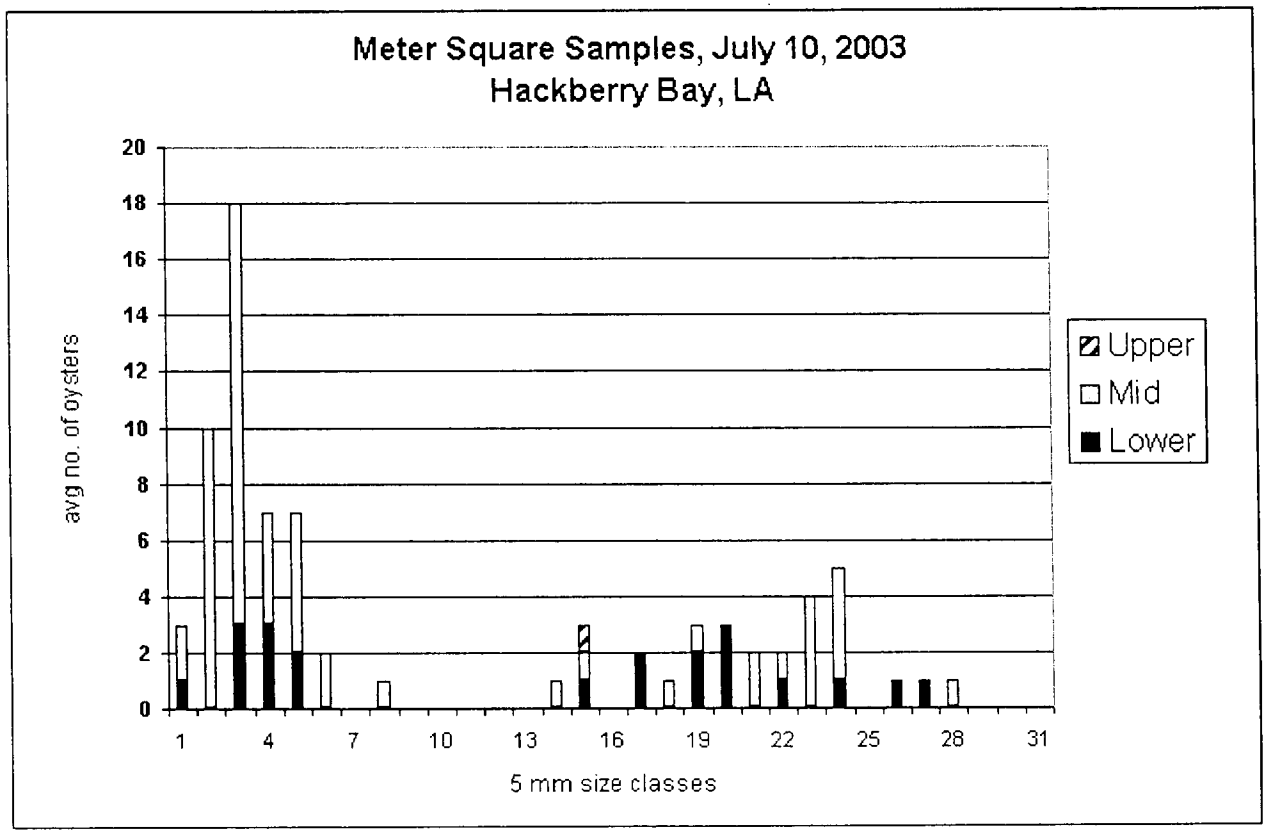

Meter Square Samples, July 10, 2003
Hackberry Bay, LA
avg no. of oysters
0
2
4
6
8
10
12
14
16
18
20
1
4
7
10
13
16
19
22
25
28
31
5 mm size classes
Upper
Mid
Lower

Figure 3

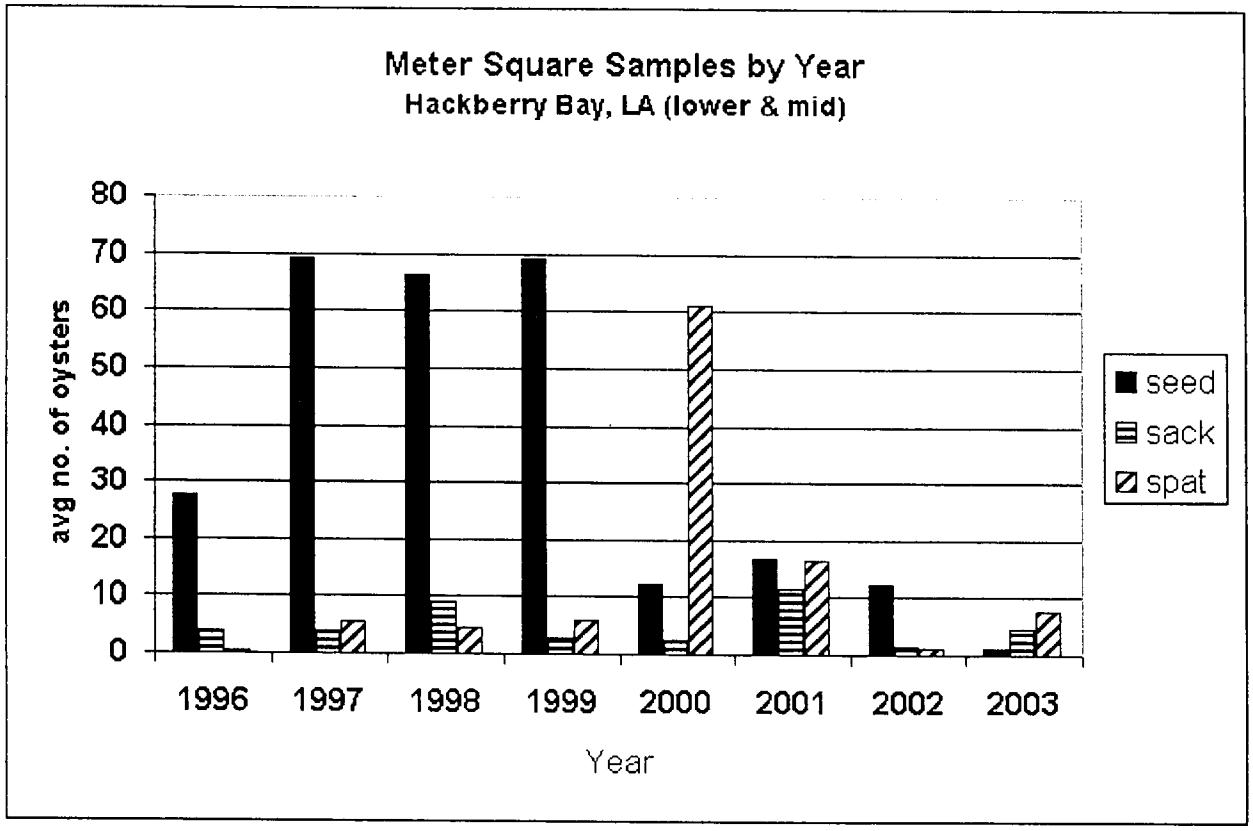

Meter Square Samples by Year
Hackberry Bay, LA (lower & mid)
avg no. of oysters
80
70
60
50
40
30
20
10
0
1996
1997
1998
1999
2000
2001
2002
2003
Year
seed
sack
spat

Table 1.

2003 HACKBERRY BAY OYSTER AVAILABILITY
(Reefs Only)

METER^2 STATION	REEF ACREAGE	# METER^2	# SEED OYSTERS	# SACK OYSTERS	BARRELS SEED OYSTERS	BARRELS SACK OYSTERS
1, 2, 3	14.7	59,380.0	1.0	5.0	82.5	824.7

CSA V

State of Louisiana

James H. Jenkins, Jr.
Secretary

Department of Wildlife & Fisheries
Post Office Box 189
Bourg, LA 70343
(985)594-4139

M.J. "Mike" Foster, Jr.
Governor

July 14, 2003

MEMORANDUM:

TO: Patrick Banks

FROM: Steve Hein and Kenny King

SUBJECT: Oyster Seed Reservation Recommendations

ASSESSMENT

Meter square field sampling was completed by Coastal Study Area V personnel on June 23, 2003. A total of 13 stations, nine in Sister Lake (Figure 1)(including the 1994 and 1995 shell plants) and four in Bay Junop (Figure 2) were sampled. Two replicate m^2 samples were taken at each station.

Preliminary m^2 site assessment was performed two weeks prior to sampling. GPS coordinates were used to place markers at all m^2 stations in Sister Lake and Bay Junop (Table 1 & 2). CSA V personnel noted Station 254 in Bay Junop appeared to be located within the boundaries of a private lease. The LDWF Survey Section later verified that Station 254 was located within a private lease. After consultation with oyster program staff in Baton Rouge, Station 254 was suspended until further notice.

Sister Lake Seed Reservation was closed to harvest for the 2002-2003 season. Overall, total barrels (BBLS) available for harvest has decreased from last year's assessment by 6%. Oysters available for harvest this season in Sister Lake total 131,038.3 BBLS (Table 3) of seed oysters and 151,844.5 BBLS (Table 3) of sack oysters ranking them 11th and 9th, respectively, for the period since 1980 (Table 4). Barrels of sack oysters available for harvest represents a decline of 18% from last year's assessment, with barrels of seed oysters increasing 14% from last year's assessment. The ratio of seed to sack availability has increased from last year's assessment of 0.6-1.0 to 0.9-1.0 for 2003 (Table 4). The majority of estimated sack and seed oysters available for harvest is located above the traditional Department of Health and Hospitals (DHH) pollution line effective November 1.

Bay Junop Seed Reservation was open to sack and seed harvest for a period of 24 days in 2002. This relatively short season produced noticeable benefits evident in this year's stock assessment. For reference purposes, m^2 data calculations were performed with the omission of Station 254 from the past five stock assessments. Oysters available for harvest total 10,455.6 BBLS of seed oysters and 33,518.0 BBLS of sack oysters (Table 5). Estimated total BBLS available for harvest ranks third since 1998 (Table 7) which represents an overall 140% increase from 2002. Both sack and seed oyster availability increased 178% and 67%, respectively, from 2002. Seed to sack ratio has decreased from last year's assessment of 0.7-1.0 to 0.3-1.0 for 2003 (Table 6).

With the omission of Station 254, 2003 Bay Junop oyster availability still ranks 13th in seed production and 6th in sack production since 1980 (Table 6).

Average water temperatures in Sister Lake and Bay Junop were at or near the long term average (LTA) for the months of May and June, with the greatest deviance being 0.8°C (Table 9). Salinities in Sister Lake were near the LTA (14.2 ppt) for May (15.4 ppt) and slightly below the LTA (9.3 ppt) for June (7.2 ppt). Salinities in Bay Junop were near the LTA (19.0 ppt) for May (18.2 ppt) but below the LTA (13.3 ppt) for June (8.9 ppt) (Table 10). Square meter temperatures and salinities can be found in Tables 9 and 10. Recent USGS salinity data (Figure 7) from Sister Lake indicates depressed salinities below 4 ppt following Tropical Storm Bill and frequent rainfall. If salinities remain at or below 5 ppt with water temperatures at or above 30°C for extended periods increased mortality of oyster stocks could occur. Oyster stocks are currently monitored by dredge analysis on a weekly basis for evidence of mortality.

Replicate samples were combined for a total number of hooked mussels at each station (Table 11 & 12). Biofouling rates of hooked mussels in Sister Lake increased 28% from last year's assessment with four stations accounting for 89% of the total hooked mussels (200, 207, 213, 217). The remaining five stations ranged from 0-38 hooked mussels per station. Biofouling rates in Bay Junop increased 463% from 2002 and 264% from 2001. One station (251) accounted for 86% of the total hooked mussels with the remaining three ranging from 2-55 hooked mussels per station.

Approximately 20-30 live oysters from north and south Sister Lake and Bay Junop were collected with a 2 ft oyster dredge for "Dermo" analysis. Samples were collected on June 26, 2003 and delivered to Dr. Tom Soniat at Nicholls State University. Results of *Perkinsus marinus* (Dermo) analysis indicate an overall decrease of weighted incidences in comparison with 2002 (Table 14)(Figures 5&6), however 2003 samples were taken earlier with lower salinities. Days to critical level of disease (assuming weighted incidence of 1.5 as critical) were calculated utilizing the "Dermowatch Calculator". Days to critical level ranged from 18-1000 days assuming no changes in temperature, salinity and oyster length (Table 13). Very little mortality is expected as a result of *Perkinsus marinus* infection.

No evidence of oyster drills (*Stramonita* [=*Thias*] *haemastoma*) was present in square meter samples, however some eggs were noted in one June dredge sample in Bay Junop. A total of 67 unidentified mud crabs were recorded from the 13 stations. No blue crabs (*Callinectes sapidus*), stone crabs (*Menippe adina*), or toadfish (*Opsanus beta*) were collected.

SISTER LAKE

Sister Lake Seed Reservation was last opened for harvest during the 2001-2002 season. Sack/seed effort was 95% and 5% respectively with a total of 68,121 sacks of marketable oysters and 18,085 barrels of seed oysters harvested.

Results of an ongoing oyster yield study in Sister Lake begun in January, 2002 produced yields of 4.82 pounds of meat during September and 6.14 pounds during October or an increase of 1.32 pounds of meat/sack (27%) (Table 15).

Sister Lake total production estimates are the lowest since 1994 (Table 4), with the majority of potential production (91%) located in the northern portion of the Lake. Oyster stocks in the southern portion of Sister Lake are severely depleted and should be afforded protection until data deems otherwise.

BAY JUNOP

Although oyster population declines in Bay Junop since the early 1990's mimic those in Sister Lake, there is a 140% overall increase since the 2002 assessment (Figure 3 & 4).

During dredge samples and poling operations, it was noted that some reefs were partially to wholly covered with detritus and a crusty silt overburden likely attributed to Hurricane Lili and Tropical Storm Isidore. This was verified by two divers during m^2 operations. With a low seed to sack ratio (0.3-1.0) and the potential of oyster mortality we believe dredging of the reefs will benefit both the remaining oyster populations by removal of overburden as well as industry benefit in additional yields.

In an ongoing yield study September yields in Bay Junop were 4.20 pounds and 5.80 in October, an increase of 1.60 pounds/sack or an increase of 38% (Table 15). However, an earlier season would be more beneficial by removing silt overburden as soon as possible. In addition, a non-concurrent season with Sister Lake would increase effort in Bay Junop.

Lake Mechant

No assessments have been made on the Lake Mechant Seed Ground and we recommend a continued closure. When time permits we will attempt to assess bottom substrates for any potential future shell plants.

SH:KK/jbv

cc: Karen Foote
Marty Bourgeois

Figure 1 Sister Lake Meter Square Samples (average # of seed and sack oysters at each station)

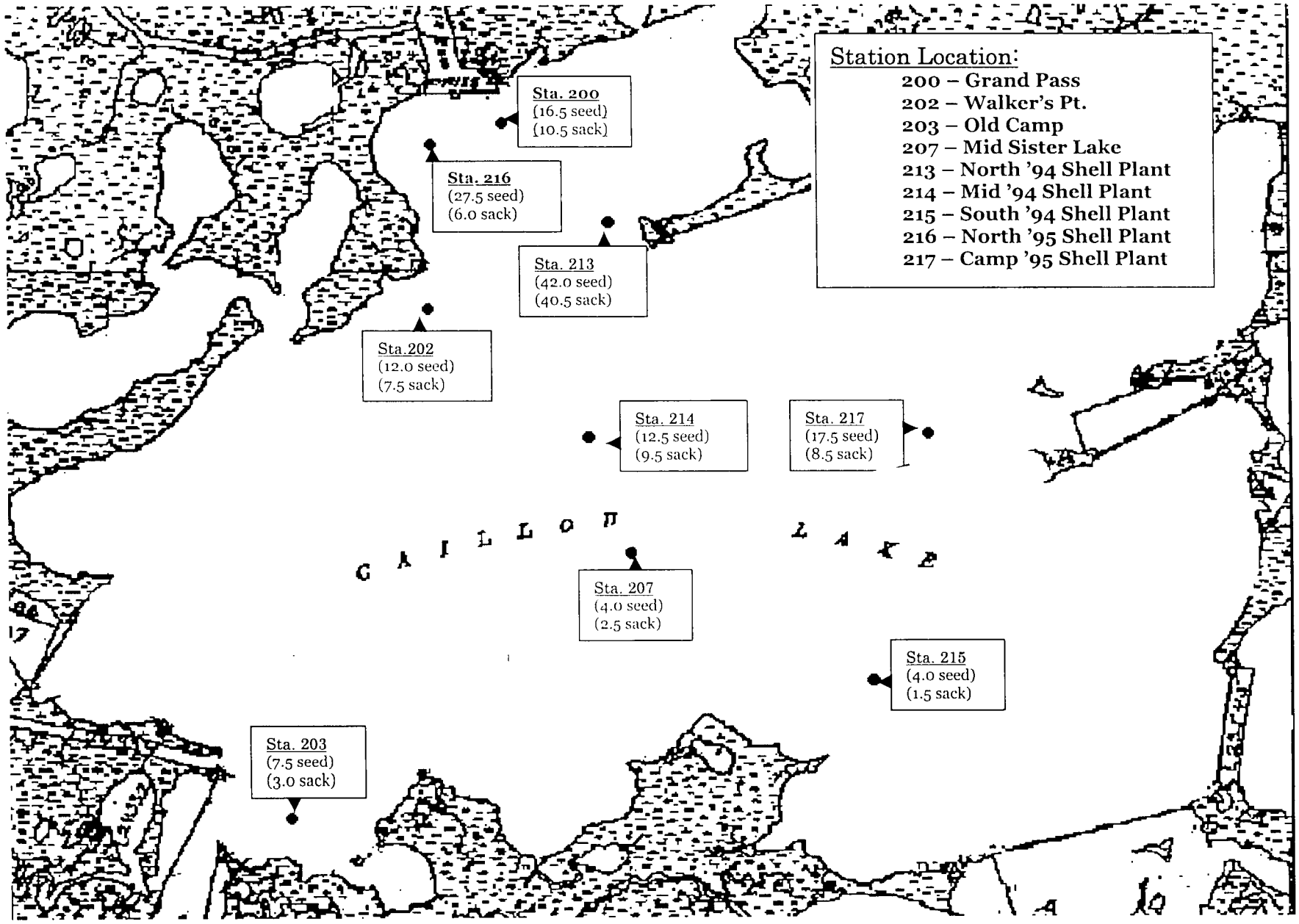


Figure 2 Bay Junop Meter Square Samples

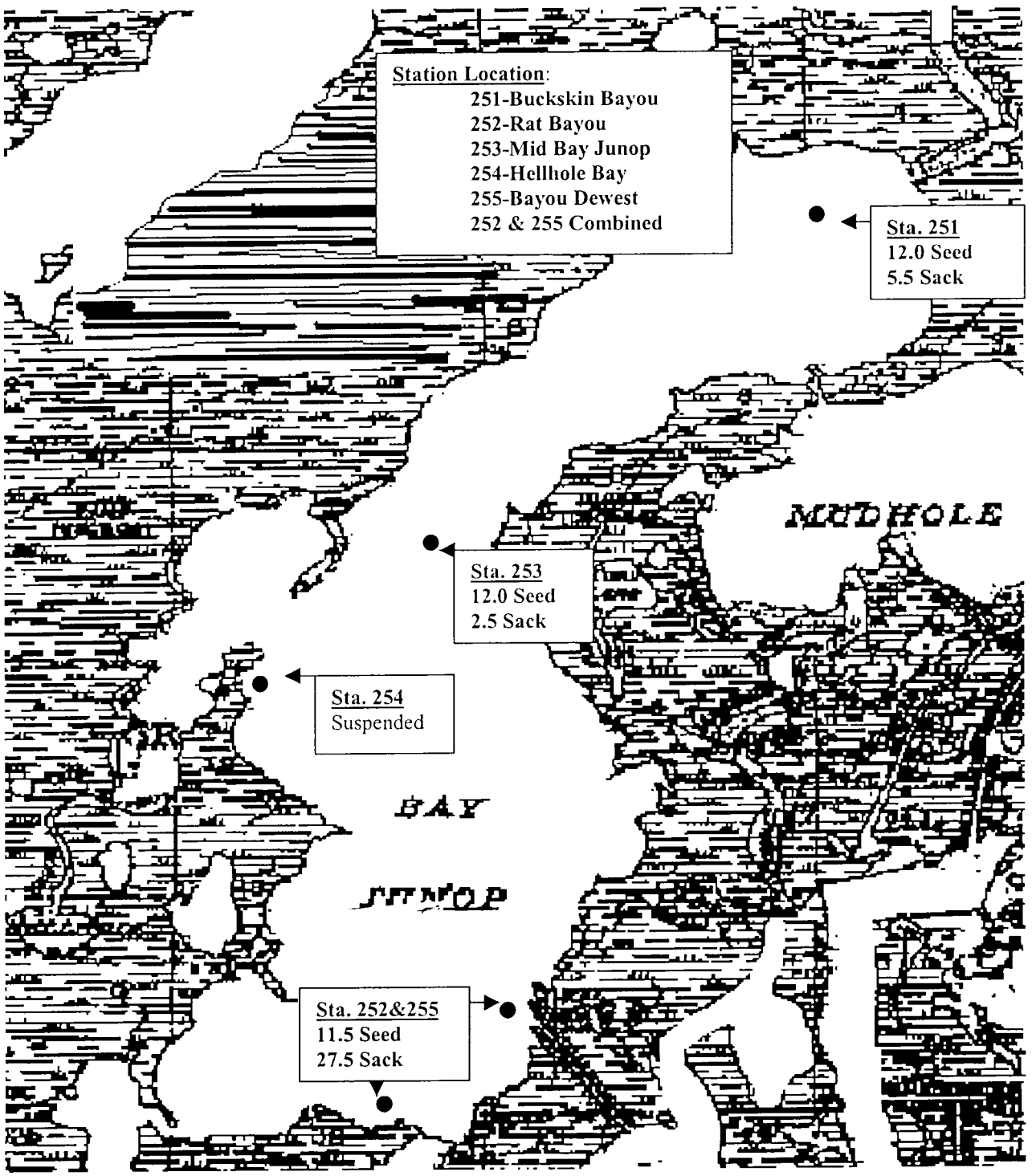


Table 1 Sister Lake M² Sample Coordinates

Stn. #	Stn. Name	North Lat.	West Long.	Depth
200	Grand Pass	29°15'28.5"	90°55'45.5"	10'
202	Walkers Pt.	29°14'50.9"	90°56'16.9"	6'
203	Old Camp	29°12'58.2"	90°56'40.2"	4'
207	Mid Sister Lake	29°14'00.1"	90°55'14.7"	6'
213**	N '94 Shell Plant	29°15'02.9"	90°55'30.9"	6'
214**	Mid '94 Shell Plant	29°14'16.5"	90°55'33.8"	6'
215**	S '94 Shell Plant	29°13'14.1"	90°53'53.6"	5'
216***	N '95 Shell Plant	29°15'25.1"	90°56'10.1"	5'
217***	Camp '95 Shell Plant	29°14'21.8"	90°54'18.3"	5'

* Revised July 2001

** Not permanent stations; will sample 5 years then stop; 1995-1999. Continued samples '00-'03.

***Not permanent stations; will sample 5 years then stop; 1996-2000. Continued samples '01-'03.

Table 2 Bay Junop M² Sample Coordinates

Stn. #	Stn. Name	North Lat.	West Long.	Depth
251	@ Buckskin Bayou	29°15'56.1"	91°01'45.1"	6'
252	@Rat Bayou	29°13'06.6"	91°02'52.6"	3'
253	Mid Bay Junop	29°14'43.7"	91°03'08.6"	5'
254	Mid @ Hellhole Bay**	29°14'09.6"	91°03'47.6"	4'
255	@ Bayou deWest	29°12'38.4"	91°03'18.2"	4'

*Revised July 2001

** Suspended due to conflict with private lease

Table 3 2003 Sister Lake Oyster Availability

METER² STATION	REEF ACREAGE	#METER²	#SEED OYSTERS	#SACK OYSTERS	BARRELS SEED OYSTERS	BARRELS SACK OYSTERS
200	221.58	896,734.26	16.5	10.5	20,550.2	26,154.7
202	81.93	331,570.71	12.0	7.5	5,526.2	6,907.7
203	151.31	612,352.00	7.5	3.0	6,378.7	5,102.9
207	185.72	751,608.84	4.0	2.5	4,175.6	5,219.5
213*	96	388,512	42.0	40.5	22,663.2	43,707.6
214*	129	522,063	12.5	9.5	9,063.6	13,776.7
215*	81	327,807	4.0	1.5	1,821.2	1,365.9
216**	115	465,405	27.5	6.0	17,775.9	7,756.8
217**	438	1,772,586	17.5	8.5	43,083.7	41,852.7
TOTAL	**1,499.54**	**6,068,639**	**143.5**	**89.5**	**131,038.3**	**151,844.5**

* 1994 Shell Plants
** 1995 Shell Pants

Table 4 Sister Lake Historical Meter Square Available Oyster Production Estimates and Yearly Ranking

Year	Barrels Seed	Yearly Ranking	Barrels Sack	Yearly Ranking	Total BBLS	Seed to Sack Ratio
1980	142,620.1	10th	35,170.3	18th	177,790.4	4.1-1.0
1981	111,146.1	13th	110,990.2	10th	222,136.3	1.0-1.0
1982	76,950.0	16th	94,050.0	11th	171,000.0	0.8-1.0
1983	8,768.5	24th	27,654.5	20th	36,423.0	0.3-1.0
1984	69,136.0	18th	50,587.0	15th	119,723.0	1.4-1.0
1985	13775.0	23rd	16,206.0	23rd	29,981.0	0.8-1.0
1986	82,633.0	20th	21,516.0	22nd	54,150.0	1.5-1.0
1987	18,522.0	22nd	2,008.0	24th	20,530.0	9.2-1.0
1988	47,695.0	19th	69,570.0	13th	117,265.0	0.7-1.0
1989	26,179.0	21st	64,549.5	14th	90,728.5	0.4-1.0
1990	72,862.9	17th	24,282.0	21st	97,144.9	3.0-1.0
1991	87,044.2	14th	28,733.7	19th	115,777.9	3.0-1.0
1992	172,132.0	9th	209,854.0	7th	381,986.0	0.8-1.0
1993	77,190.0	15th	35,824.0	17th	113,014.0	3.2-1.0
1994	358,455.0	4th	50,429.0	16th	408,884.0	7.1-1.0
1995	236,687.0	8th	397,777.0	2nd	634,464.0	0.6-1.0
1996	384,500.0	3rd	256,164.0	6th	640,664.0	1.5-1.0
1997	540,270.2	1st	557,072.2	1st	1097342.4	1.0-1.0
1998	298,975.0	6th	327,125.0	4th	626,100.0	0.9-1.0
1999	452,991.0	2nd	301,321.0	5th	452,991.0	1.5-1.0
2000	243,589.9	7th	76,515.5	12th	320,105.4	3.2-1.0
2001	304,763.0	5th	343,655.5	3rd	648,418.5	0.9-1.0
2002	115,034.0	12th	186,233.4	8th	301,257.4	0.6-1.0
2003	131,038.3	11th	151,844.5	9th	282,882.8	0.9-1.0

Figure 3 Sister Lake Historical Stock Size

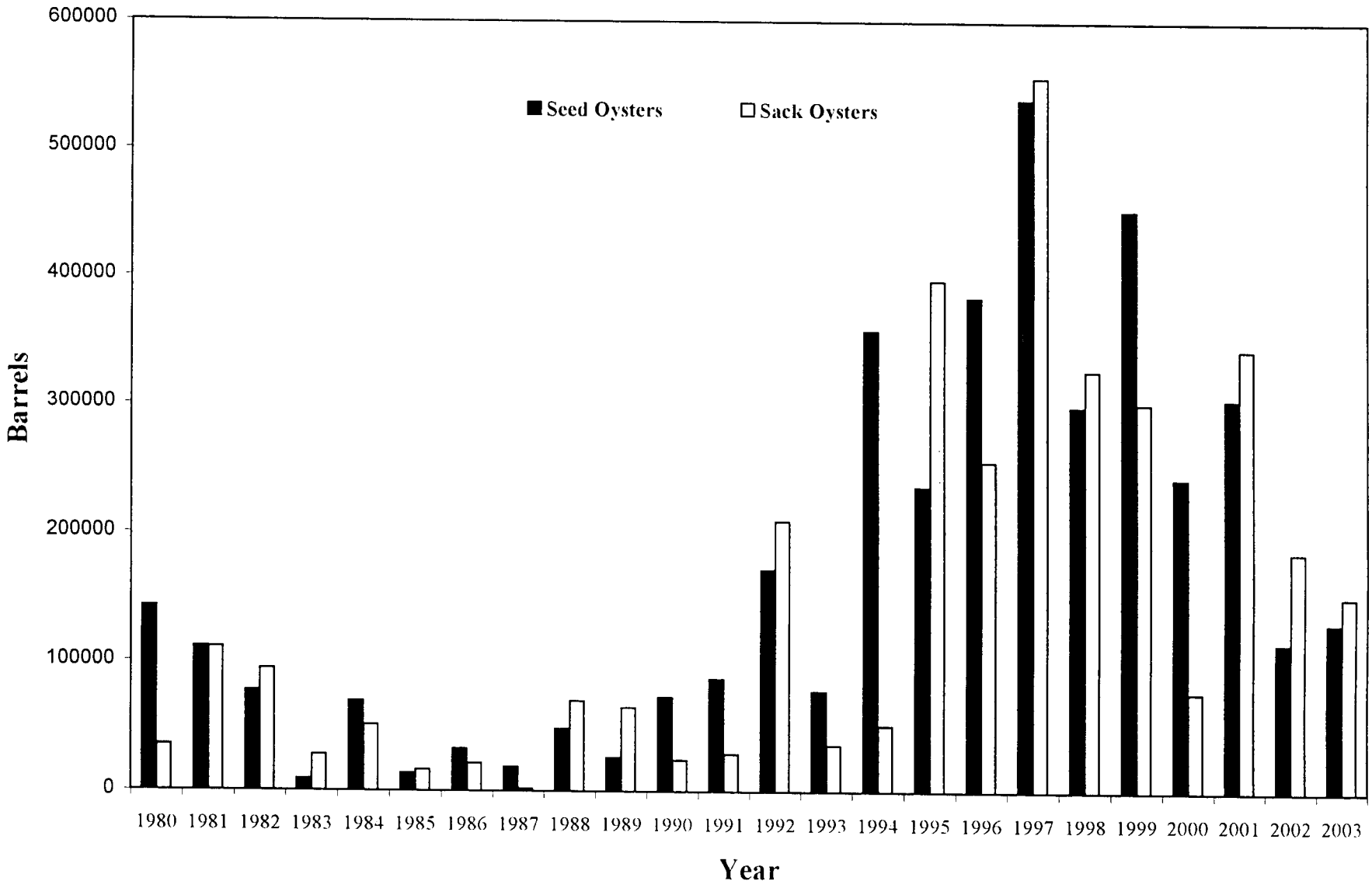


Table 5 2003 Bay Junop Oyster Availability

METER² STATION	REEF ACREAGE	#METER²	#SEED OYSTERS	#SACK OYSTERS	BARRELS SEED OYSTERS	BARRELS SACK OYSTERS
251	17.2	69,608.40	12.0	5.5	1160.1	1063.5
252*	67.36	272,605.92	11.5	27.5	4354.1	20824.1
253	73.26	296,483.22	12.0	2.5	4941.4	2058.9
254**	94.20	381,227.40	-	-	-	-
255*						
TOTAL	**252.02**	**1,019,924.9**	**35.5**	**35.5**	**10455.6**	**33518.0**

* Stations 252 and 255 are combined.

** Suspended due to conflict with private lease

Table 6 Bay Junop Historical Meter Square Available Oyster Production Estimates and Yearly Ranking

Year	Barrels Seed	Yearly Ranking	Barrels Sack	Yearly Ranking	Total BBLS	Seed to Sack Ratio
1980	4,297.4	22nd	5,632.3	19th	9,929.7	0.8-1.0
1981	22,329.0	10th	15,213.0	14th	37,542.0	1.5-1.0
1982	7,082.2	17th	21,809.0	12th	28,891.2	0.3-1.0
1983	6,464.0	19th	11,129.0	17th	17,593.0	0.6-1.0
1984*	---	24th	---	24th	---	---
1985	10,004.0	14th	3,344.5	22nd	18,848.5	3.0-1.0
1986	4,632.0	21st	4,317.0	21st	8,949.0	1.1-1.0
1987	5,878.0	20th	11,188.0	15th	17,066.0	0.5-1.0
1988	3,282.0	23rd	1,169.0	23rd	4,451.0	2.8-1.0
1989	8,073.7	16th	8,935.0	18th	17,009.0	0.9-1.0
1990	6,787.0	18th	5,249.5	20th	12,036.5	1.3-1.0
1991	8,843.0	15th	11,166.0	16th	20,009.0	0.8-1.0
1992	47,448.0	6th	31,128.0	9th	78,572.0	1.5-1.0
1993	51,492.0	5th	32,466.0	7th	83,958.0	1.6-1.0
1994	78,896.0	1st	114,808.0	2nd	193,199.0	0.7-1.0
1995	38,950.0	7th	67,837.0	4th	106,787.0	0.6-1.0
1996	62,841.0	3rd	117,669.0	1st	180,510.0	0.5-1.0
1997	17,262.0	11th	29,243.0	10th	46,505.0	0.6-1.0
1998	52,340.1	4th	90,786.6	3rd	143,126.7	0.6-1.0
1999	63,010.4	2nd	28,763.5	11th	91,773.5	2.2-1.0
2000	34,107.1	8th	61,193.8	5th	95,300.9	0.6-1.0
2001	29,453.4	9th	32,004.9	8th	61,458.3	0.9-1.0
2002	15,524.4	12th	21,583.3	13th	37,107.7	0.7-1.0
2003**	10,455.6	13th	38,518.0	6th	43,973.6	0.3-1.0

* No samples taken

** Calculated without Station 254

Table 7 Bay Junop Short Term Oyster Availability (Station 254 omitted)

Year	Barrels Seed Oysters	Barrels Sack Oysters	Total Barrels Available
1998	31,425.5	27,248.7	58,674.2
1999	19,592.8	10,761.1	30,353.9
2000	23,252.7	44,779.8	68,032.5
2001	9,333.1	8,178.2	17,511.3
2002	6,258.5	12,052.6	18,311.1
2003	10,455.6	33,518.0	43,973.6

Table 8 Bay Junop Short Term Ranking of Total Production (Station 254 omitted)

Year	Total Production (Barrels)
2000	68,032.5
1998	58,674.2
2003	43,973.6
1999	30,353.9
2002	18,311.1
2001	17,511.3

Figure 4 Bay Junop Historical Stock Size

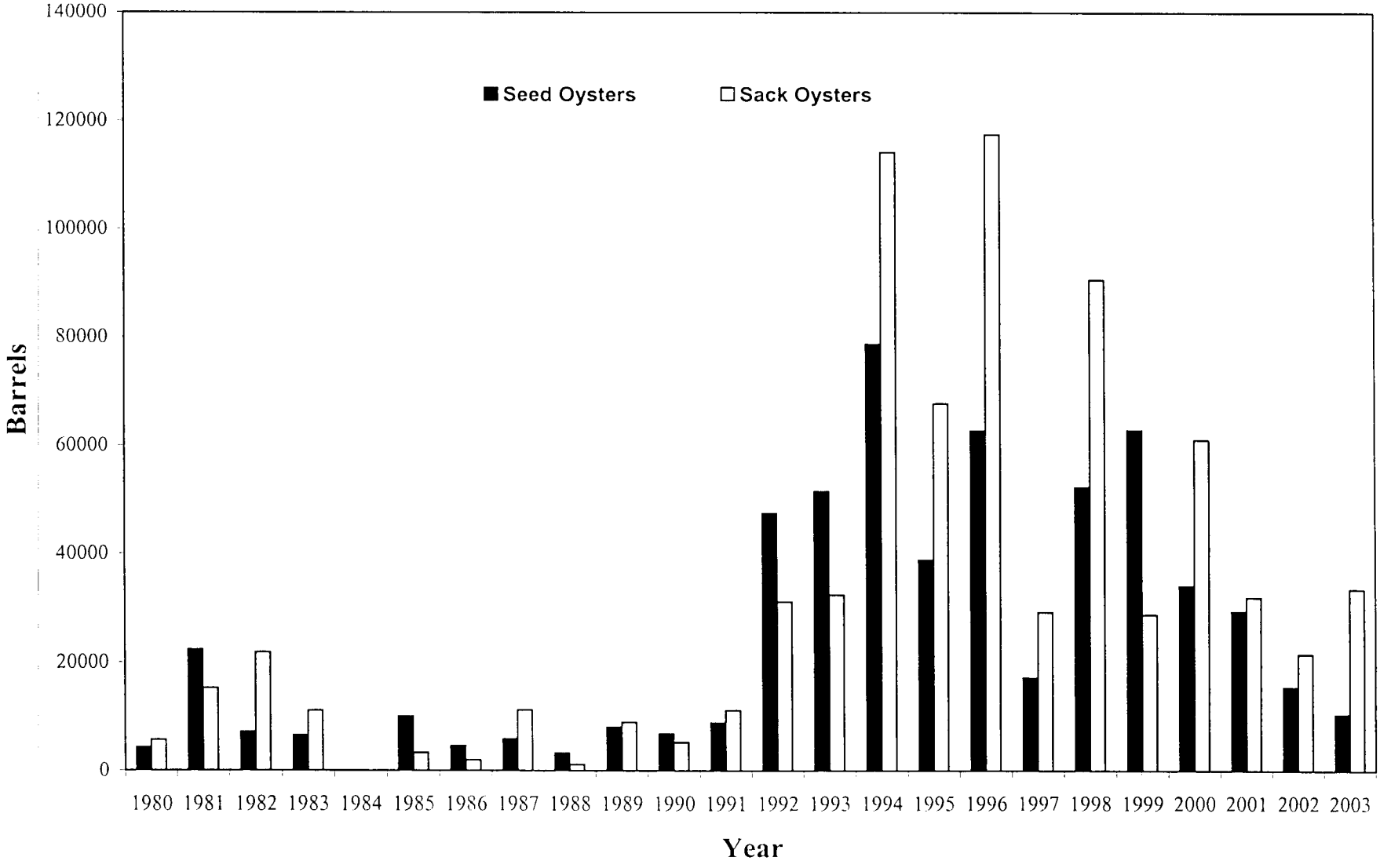


Table 9 Mean Water Temp (°C) in Sister Lake and Bay Junop

	SISTER LAKE		BAY JUNOP	
YEAR	MAY	JUNE	MAY	JUNE
1995	27.3	29	29.3	29.3
1996	27.2	29.5	28.4	30.3
1997	27.1	30	26.4	28.6
1998	27.8	30.1	28	28.9
1999	25	28.8	25	28.8
2000	27.3	28.8	28.3	29.7
*2001	24.9	29.3	26.0	30.1
*2002	28.4	28.7	28.4	28.5
*2003	27.8	30.0	27.6	30.2
mean	27.0	29.4	27.5	29.4

*OYSTER DREDGE SAMPLES

Table 10 Mean Salinity (ppt) in Sister Lake and Bay Junop

	SISTER LAKE		BAY JUNOP	
YEAR	MAY	JUNE	MAY	JUNE
1995	14.5	8.8	23.3	12.6
1996	15.8	7.4	24.3	12.2
1997	4.1	3.4	10.6	10.7
1998	6.6	4.8	14.4	8.6
1999	17.7	12.4	19.4	13
2000	22	20.5	25.5	27.7
*2001	17.6	8.2	18.4	9.8
*2002	14.2	11.1	16.6	15.9
*2003	15.4	7.2	18.2	8.9
mean	14.2	9.3	19.0	13.3

*OYSTER DREDGE SAMPLES

Table 11 Sister Lake Hooked Mussel Distribution

Stn. #	Stn. Name	1998	1999	2000	2001	2002	2003
200	Grand Pass	2	28	2	764	322	224
202	Walker's Pt.	48	59	2	3	9	38
203	Old Camp	0	85	0	0	0	3
207	Mid Sister Lake	112	85	11	0	36	73
213	N '94 Shell Plant	123	23	27	129	247	506
214	Mid '94 Shell Plant	64	51	19	350	145	28
215	S '94 Shell Plant	31	567	6	0	4	0
216	N '95 Shell Plant	35	45	22	124	5	37
217	Camp '95 Shell Plant	534	201	9	36	0	73

*** Hooked Mussels in sample – both combined at each station to show total mussels.

Table 12 Bay Junop Hooked Mussel Distribution

Stn. #	Stn. Name	1998	1999	2000	2001	2002*	2003
251	BJ @ Buckskin Bayou	0	136	308	0	0	396
252	BJ @ Rat Bayou	19	24	0	49	0	55
253	Mid Bay Junop	88	20	9	0	0	10
254	Mid BJ @ Hellhole Bay**	750	452	14	78	0	-
255	BJ @ Bayou DeWest	78	25	17	0	0	2

* No Data Collected – Noted that some stations may have had five or less.
** Suspended due to conflict with private lease
*** Hooked Mussels in sample – both combined at each station to show total mussels.

Table 13 Percent Infection and Weight Incidence of *perkinsus marinus* in Sister Lake and Bay Junop

STATION NAME	SALINITY (ppt)	TEMP (°C)	SIZE RANGE (mm)	PERCENT INFECTION (PI)	WEIGHTED INCIDENCE (WI)	DAYS TO CRITICAL LEVEL
Grand Pass (200) (North Sister Lake)	3.3	29.7	85-125	10%	0.03	1000
Old Camp (203) (South Sister Lake)	6.4	30.5	88-102	20%	0.07	138
Buckskin Bayou (251) (North Bay Junop)	1.7	30.6	89-126	0%	0.0	1000
Bayou DeWest (255) (South Bay Junop)	8.6	30.6	85-105	20%	0.07	18

Table 14 Weighted Incidences Of Dermo In M² Samples 1997 -2003

	Station			
Year	200	203	251	255
1997	0.0	0.3	0.0	0.43
1998	0.0	0.17	0.0	0.23
1999	1.0	1.10	0.13	1.40
2000	1.43*	1.03	0.43	1.17
2001	0.03	0.40	0.13**	0.37***
2002	0.17	0.73	0.37**	0.77
2003	0.03	0.07	0.0	0.07

* NORTH 1994 SHELL PLANT (213)– ALTERNATE SITE

** MID BAY JUNOP (253) – NO OYSTERS AVAILABLE AT NORTH BAY JUNOP SITE (251)

*** RAT BAYOU (252) – ALTERNATE SITE

Table 15 – Oyster Yields

Oyster Yield – 2002

Total weight of Oysters and sack = 105 lbs

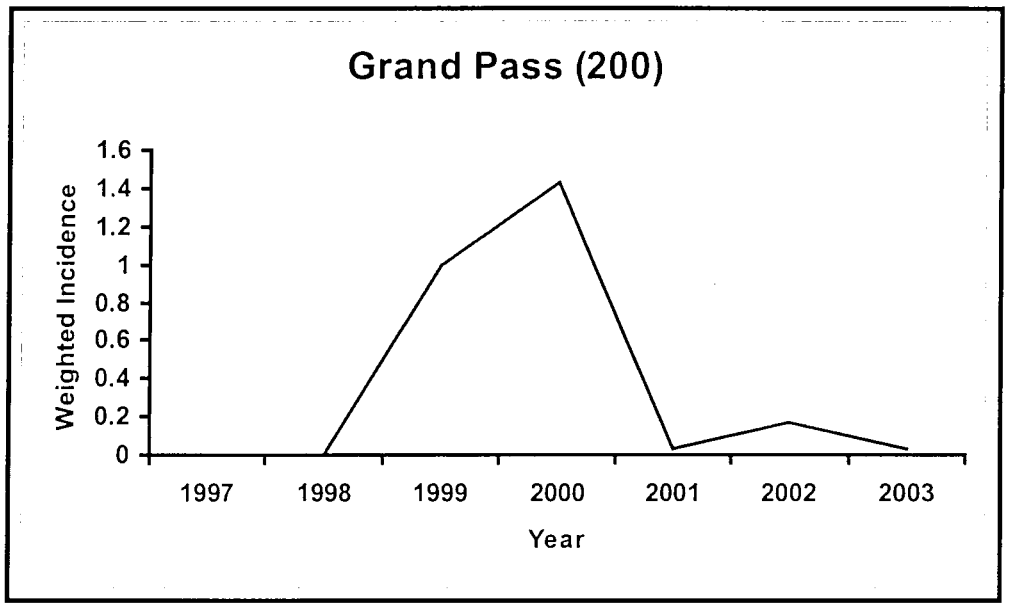
Date	Day	Sister Lake (Site Sampled)	Yield (lbs.)	Bay Junop (Site Sampled)	Yield (lbs.)
January	17	Walker's Pt.	6.50	Lower Bay Junop	7.75
February	26	Walker's Pt	9.02	Lower Bay Junop	9.26
March	19	Grand Pass	7.60	Mid Bay Junop	9.50
April	--	--	--		--
May	29	M² Sta. 213	6.0	Lower Bay Junop	5.5
June	29	M² Sta. 214	5.4	Mid Bay Junop	7.7
July	22	Grand Pass	4.4	Mid Bay Junop	4.9
August	20	Walker's Pt.	4.94	Mid Bay Junop	4.28
September	19	Walker's Pt.	4.82	Lower Bay Junop	4.20
October	24	Grand Pass	6.14	Lower Bay Junop	5.80
November	25	Grand Pass	7.76	Lower Bay Junop	7.66
December	17	Walker's Pt.	7.76	Mid Bay Junop	6.88

Oyster Yield – 2003

Total weight of Oysters and sack = 105 lbs

Date	Day	Sister Lake (Site Sampled)	Yield (lbs.)	Bay Junop (Site Sampled)	Yield (lbs.)
January	29	Walker's Pt.	8.22	Mid Bay Junop	9.28
February	25	Walker's Pt.	8.42	Mid Bay Junop	9.86
March	25	Walker's Pt.	9.78	Mid Bay Junop	9.70
April	29	Walker's Pt.	8.98	Mid Bay Junop	9.48
May	28	Walker's Pt.	6.10	Mid Bay Junop	7.06
June	24	Walker's Pt.	6.18	Mid Bay Junop	7.28
July					
August					
September					
October					
November					
December					

Figure 5 Sister Lake Weighted Incidences of *Perkinsus marinus* For Years 1997-2003



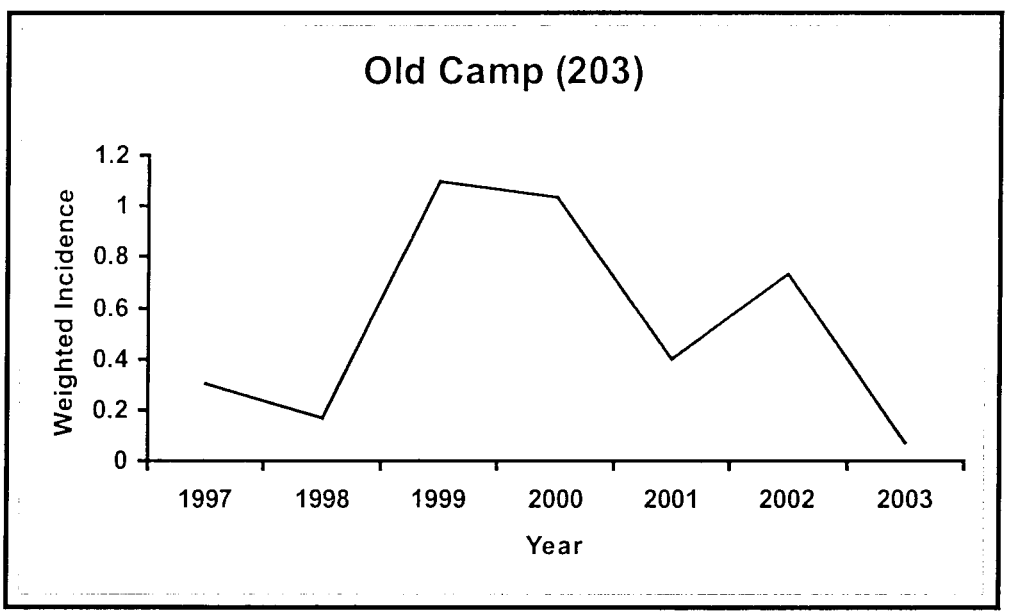
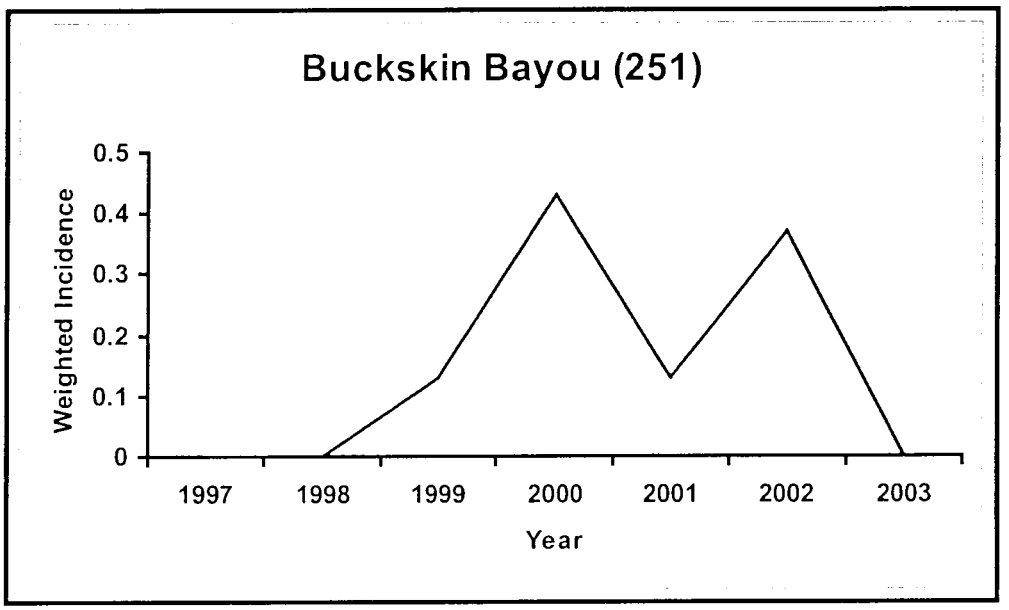


Figure 6 Bay Junop Weighted Incidences of *Perkinsus marinus* For Years 1997-2003



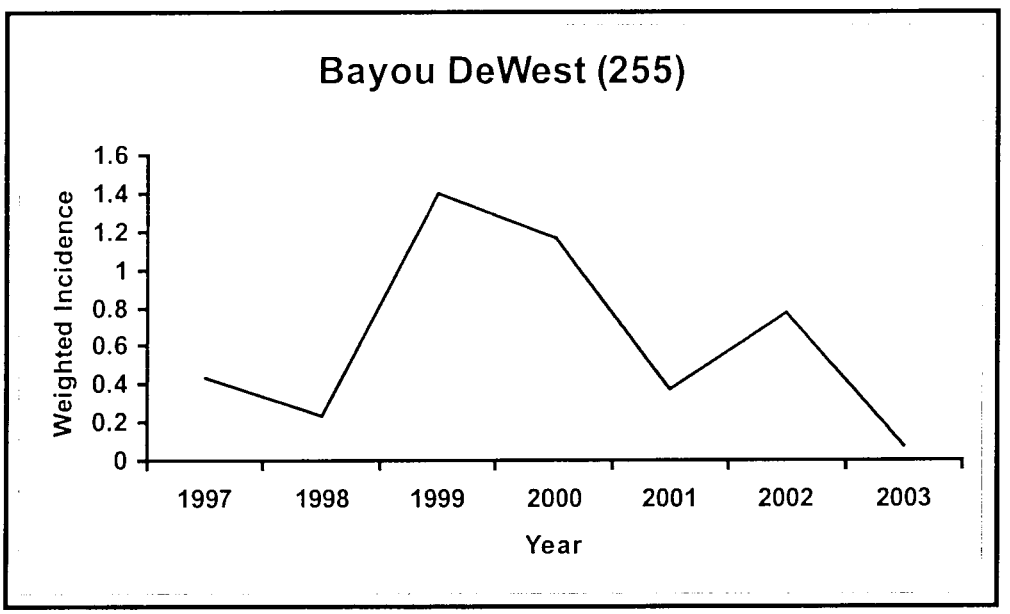
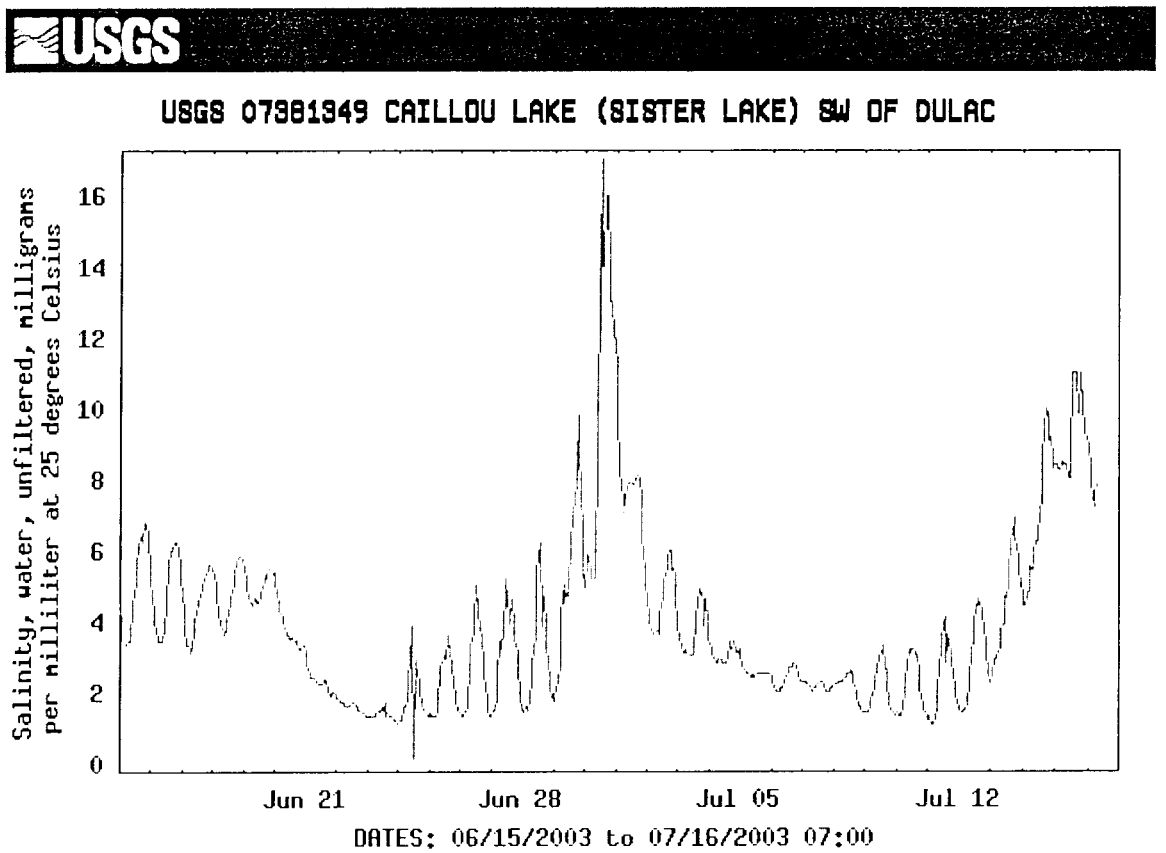


Figure 7 Sister Lake USGS Salinity Data



CSA VI

State of Louisiana

James H. Jenkins, Jr.
Secretary

Department of Wildlife & Fisheries
2415 John Darnall Road
New Iberia, LA 70560
(337)373-0032

M.J. "Mike" Foster, Jr.
Governor

TO: Patrick Banks

FROM: E. Paul Cook

DATE: July 17, 2003

SUBJECT: CSA 6 Square Meter Oyster Samples / 2003

Square meter field sampling of designated sites on the inshore and offshore areas of the Vermilion, East and West Cote Blanche and Atchafalaya Bays Public Oyster Seed Ground was completed on July 10, 2003. A total of 5 (five) stations were sampled with one additional replicate made at each station.

Results of the 2003 samples were as follows:

Station No.	Station Name	Avg. No. Seed Oysters	Avg. No. Sack Oysters
001	South Pt. / M. I.	0.0	0.0
002	Big Charles / SWP	5.5	0.0
003	Indian Pt. / SWP	4.0	0.0
004	Dry Reef	0.0	0.0
005	Bayou Blanc	0.0	0.0

An overall Vermilion Bay area stock assessment is not possible at this time as figures relative to oyster reef sizes are not available.

This years samples found no sack oysters that would have been available for harvest. It should be noted that all CSA 6 square meter sample sites are in the "restricted" area by order of DHH.

It is evident from this years survey results that oyster numbers have substantially decreased from those seen in 2000 and 2001(See Table 1). The drought period of 1999 through 2000 created a relatively long period of growth for local oysters without a significant freshwater mortality event occurring until the spring of 2001.

TABLE 1.

Vermilion / Atchafalaya Area Oyster Availability		
YEAR	SEED/SACK RATIO (M^2)	AVERAGE NO. OYSTERS/SAMPLE
1999	69.0:1	14.0
2000	34.0:1	90.9
2001	9.5:1	41.9
2002	22.5:1	13.6
2003	NO SACK OYSTERS	01.9

Atchafalaya River discharge for 2003 remained at levels that significantly affected hydrologic conditions in the Vermilion/Atchafalaya Complex. Salinity throughout the system fell below 3 ppt (in some areas it has been <1 ppt) in early June and has remained low to date. (See Table 2).

TABLE 2.

Vermilion/Atchafalaya Area M^2 Salinity and Water Temperature (7/10/03)			
STATION NO.	STATION NAME	SALINITY (ppt)	TEMPERATURE (°C)
001	South Pt./Marsh Island	0.2	30.0
002	Big Charles	0.9	29.8
003	Indian Pt.	0.9	29.9
004	Dry Reef	0.7	29.6
005	Bayou Blanc	0.2	29.8

Recent oyster mortality on the eastern portion of the system has been noted from dredge samples taken in June and July of 2003. Dredge samples taken on June 9-10, 2003 averaged 42.3 live oysters with no recent mortality noted (the ratio of seed/sack oysters was 9.6:1). The average salinity for all stations was 1.7 ppt. By June 24, 2003 dredge samples found 85.1% and 92.9% recent mortality at the Bayou Blanc and South Pt. / Marsh Island stations respectively (salinity levels remained <0.5 ppt on the east end of the system). On July 3, 2003 no live oysters were found at these 2 (two) sites. Four (4) additional dredge samples taken in the area between South Pt. and the Nickel Reef found 100% mortality. It should be noted that these low salinity conditions were documented prior to the occurrence and passage of Tropical Storm Bill on June 30, 2003.

After charting 5 years of square meter samples, it is evident that hooked mussel fouling has remained relatively low on the eastern end of the system (Bayou Blanc and South Pt.) The Indian Pt. sample has shown a decrease in fouling, while Big Charles and Dry Reef have experienced significant increases (See Table 3). Approximately 58% of the mussels documented for 2003 were found at the Dry Reef station.

TABLE 3.

Vermilion/Atchafalaya Hooked Mussel Distribution *						
STATION NO.	STATION NAME	1999	2000	2001	2002	2003
001	South Pt./Marsh Island.	20	58	3	8	19
002	Big Charles	9	16	54	187	172
003	Indian Pt.	487	304	180	31	90
004	Dry Reef	154	9	78	NDA	468
005	Bayou Blanc	29	31	51	65	64

*Average number hooked mussel per M^2 sample.

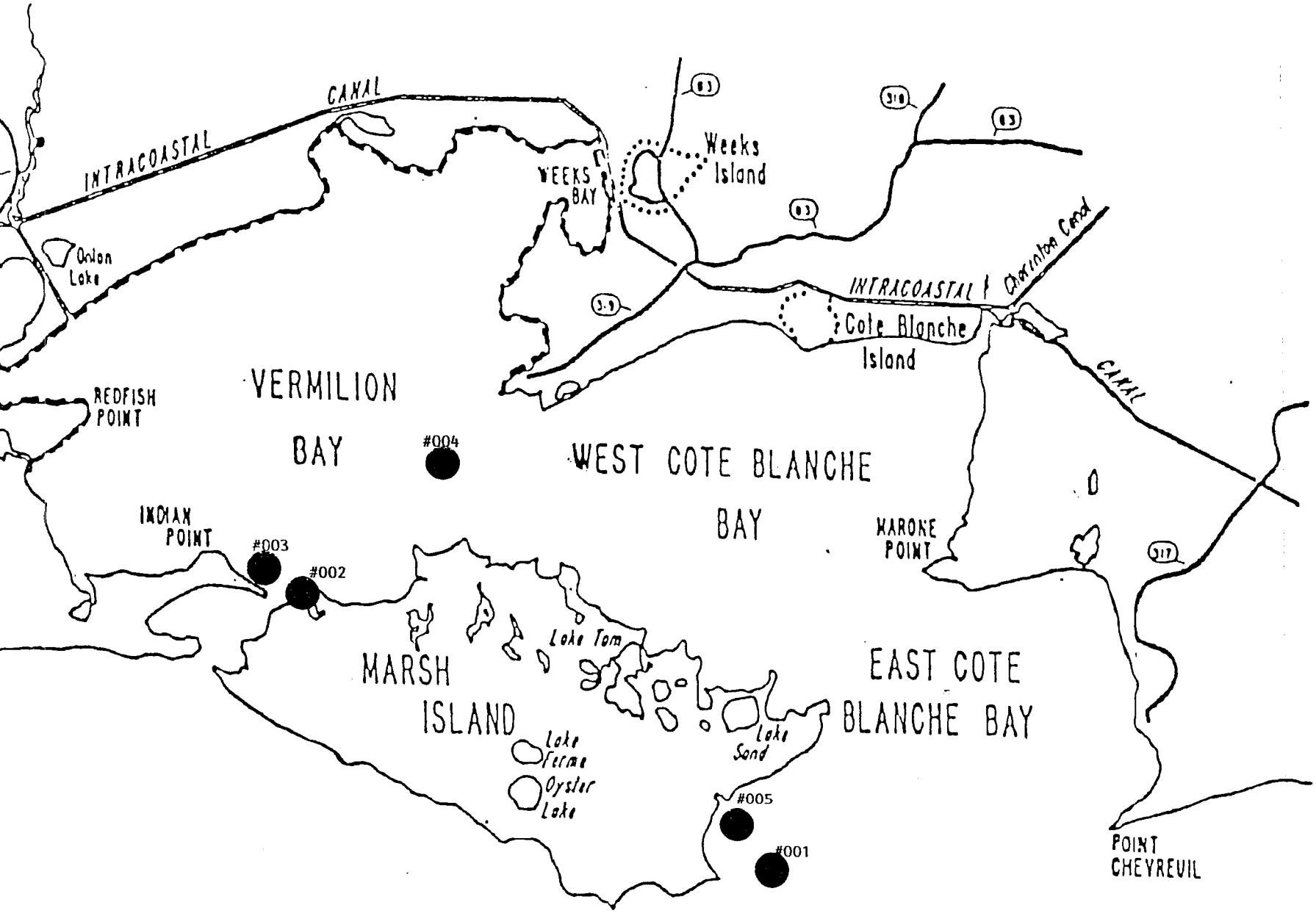
On July 7, 2003 a "Dermo" sample (Indian Pt. – sta. #003) was delivered to Dr. Tom Soniat for analysis. Results were not available for this report.

Maps and graphs depicting the 2003 CSA 6 assessment are presented as follows:

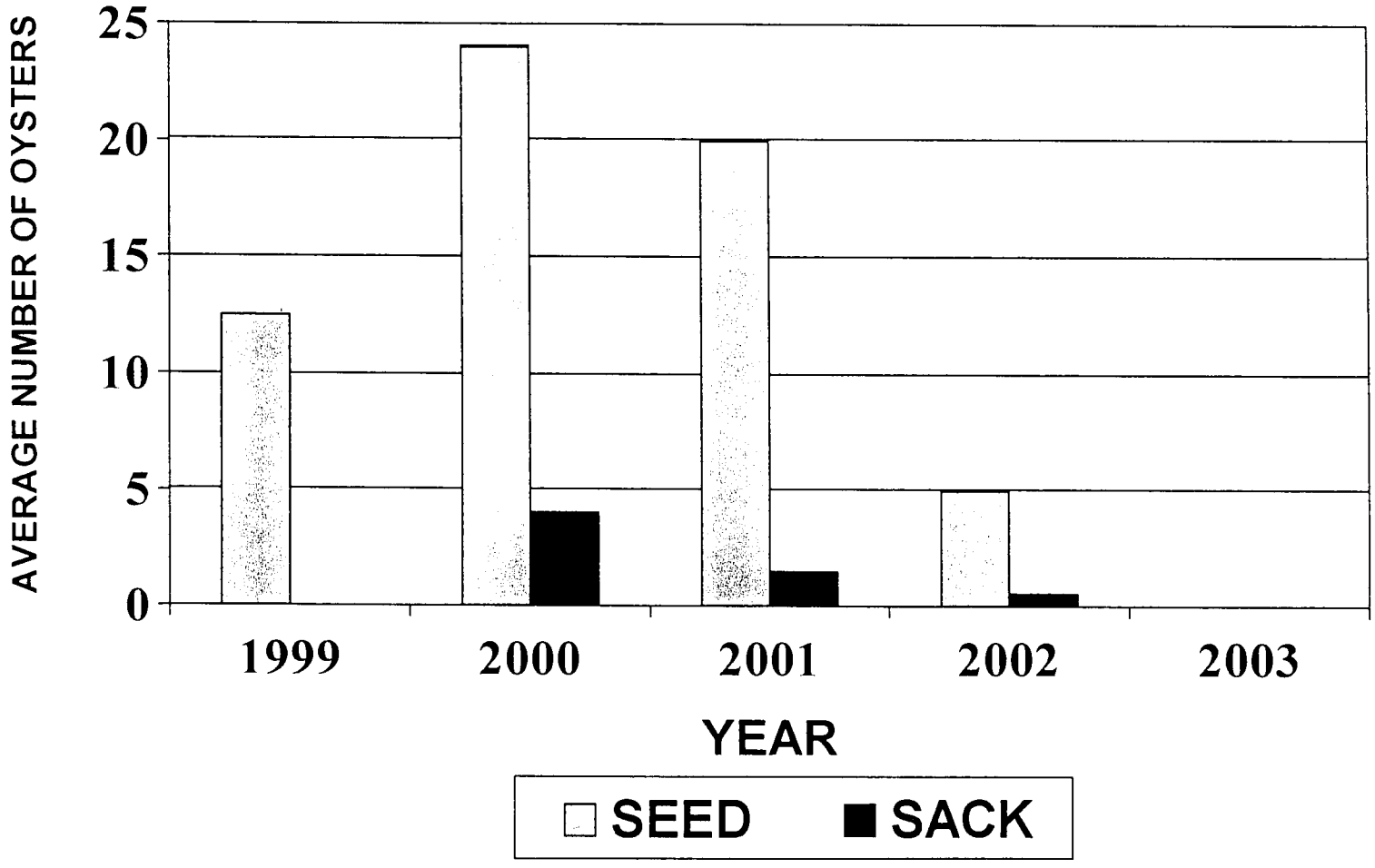
EPC/dgg

2003 SQUARE METER / CSA 6

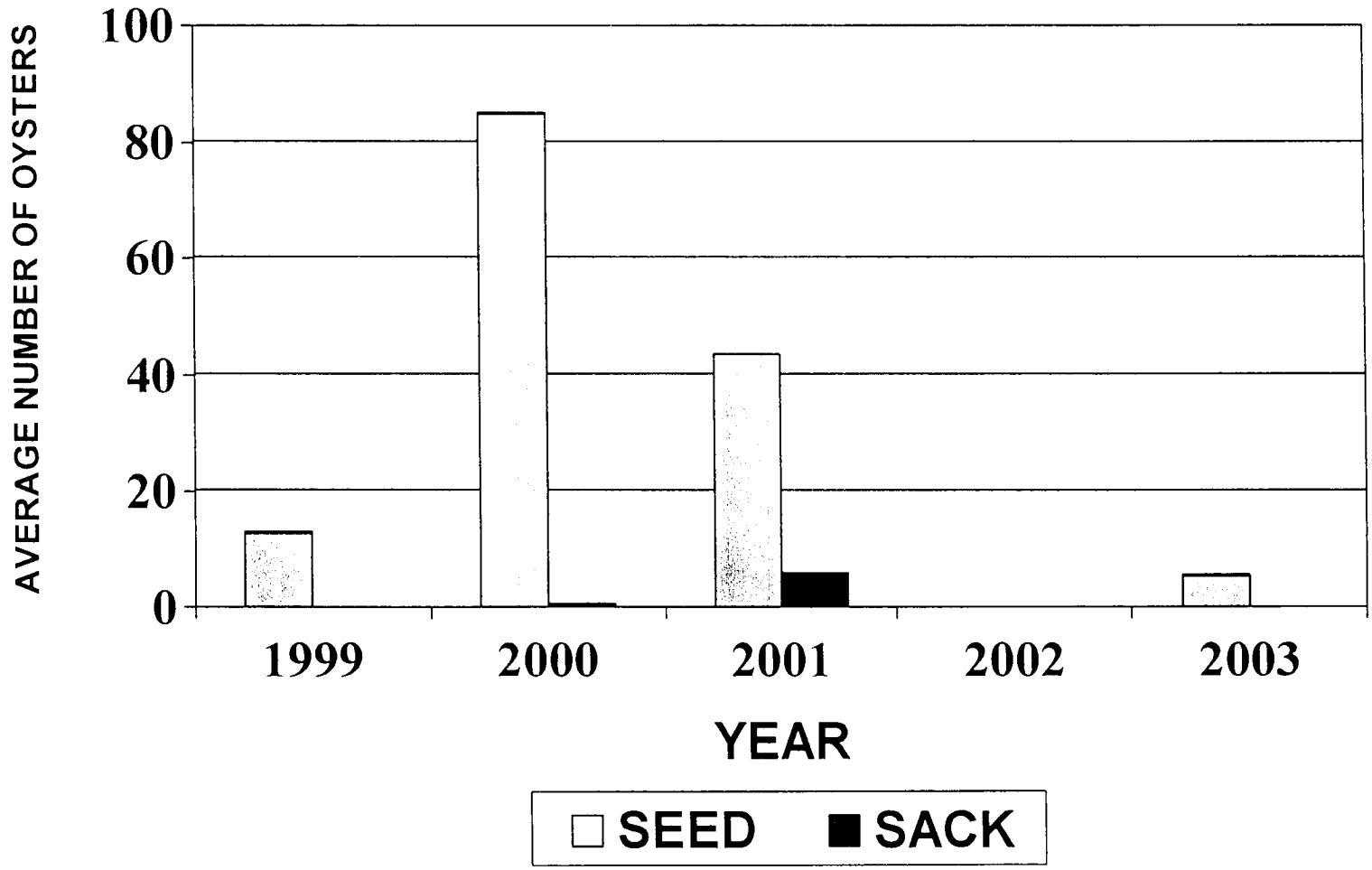
STATION NAME	STATION NO.	LATITUDE	LONGITUDE
South Point	001	N29°28.980'	W91°45.463'
Big Charles	002	N29°36.853'	W92°00.525'
Indian Point	003	N29°37.112'	W92°00.525'
Dry Reef	004	N29°41.179'	W91°54.111'
Bayou Blanc	005	N29°30.800'	W91°45.500'



SQUARE METER SAMPLES / SOUTH POINT
CSA 6



SQUARE METER SAMPLES / BIG CHARLES
CSA 6



SQUARE METER SAMPLES / INDIAN POINT
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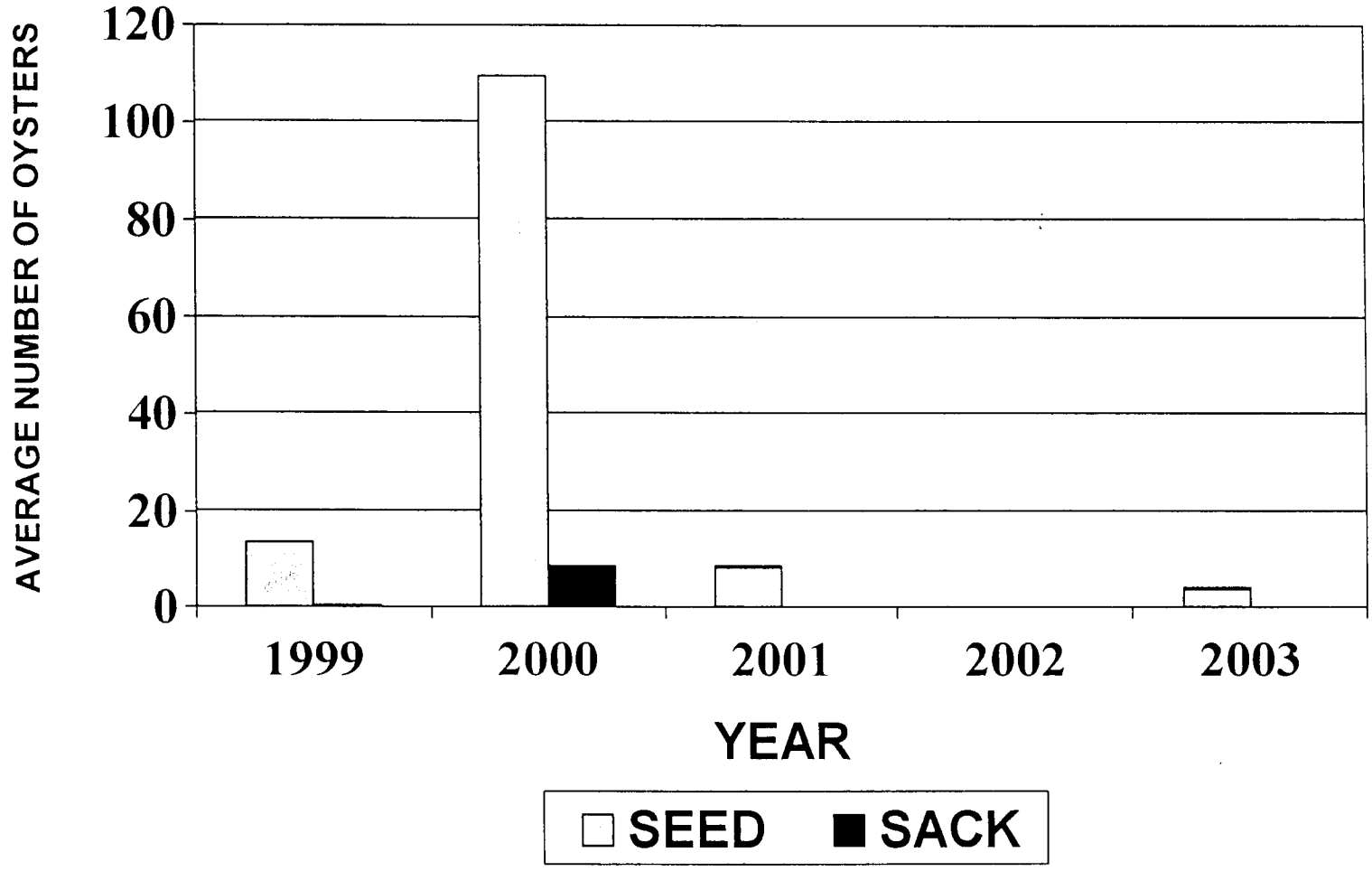
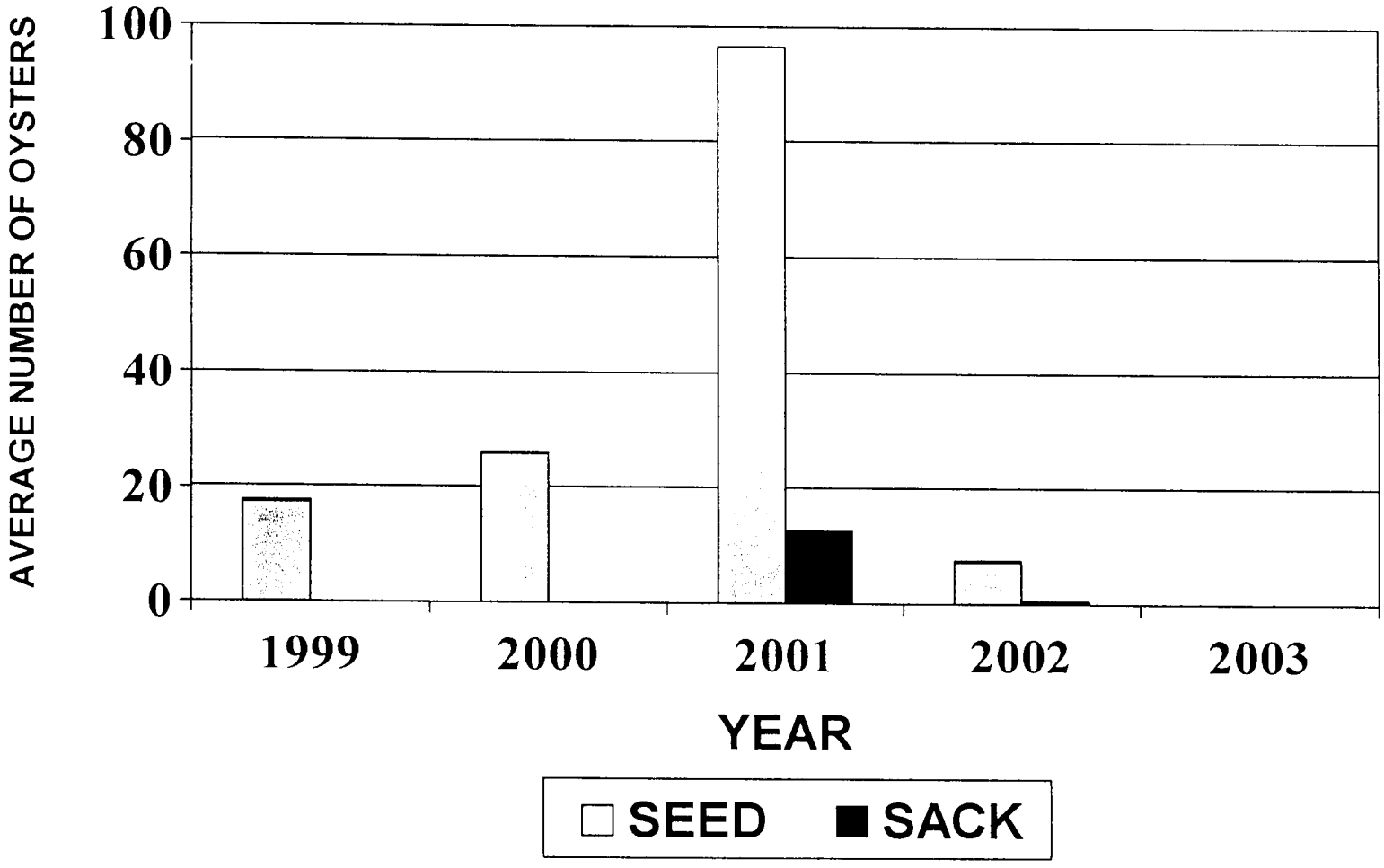
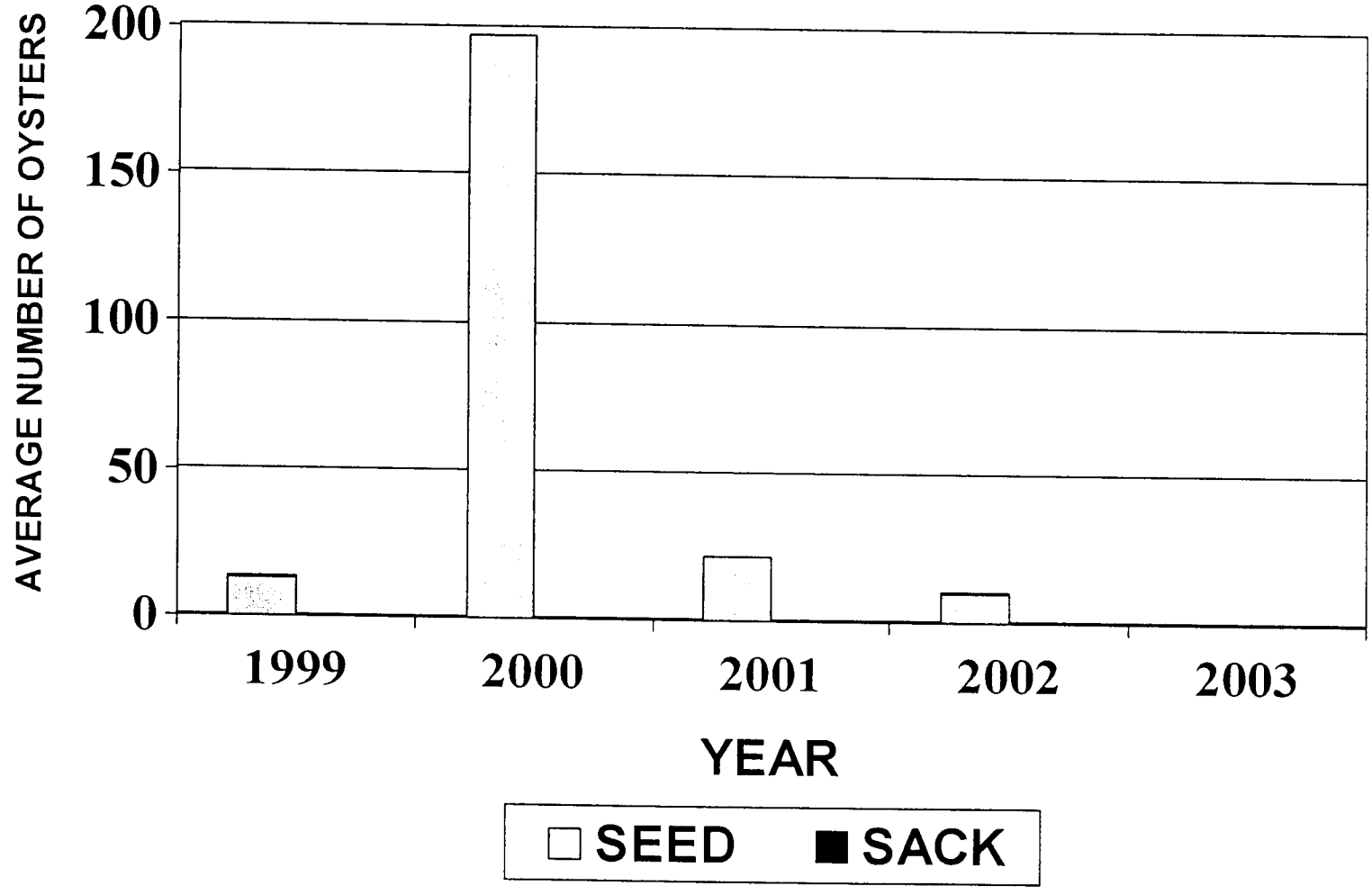


SQUARE METER SAMPLES / DRY REEF
CSA 6

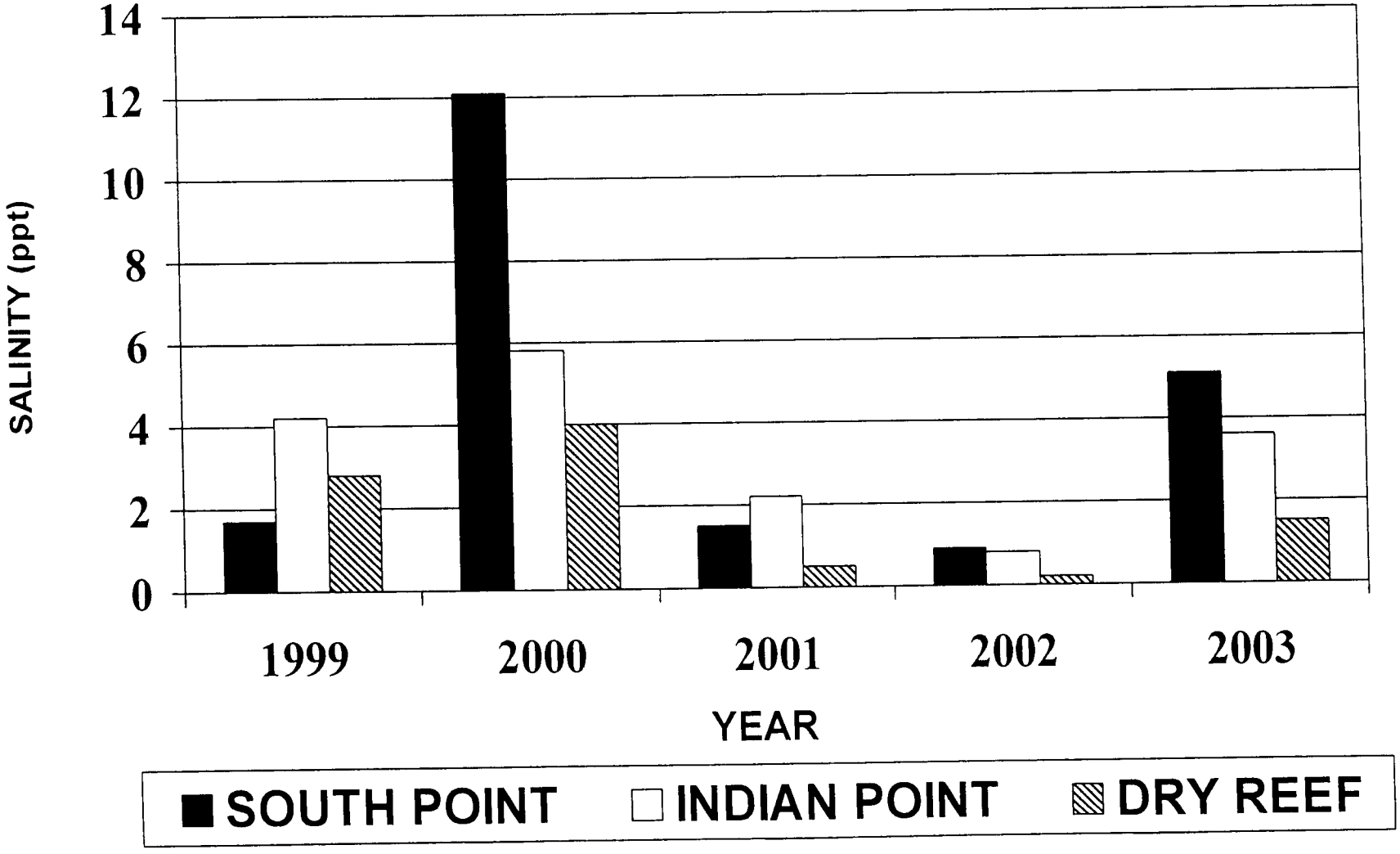


SQUARE METER SAMPLES / BAYOU BLANC
CSA 6



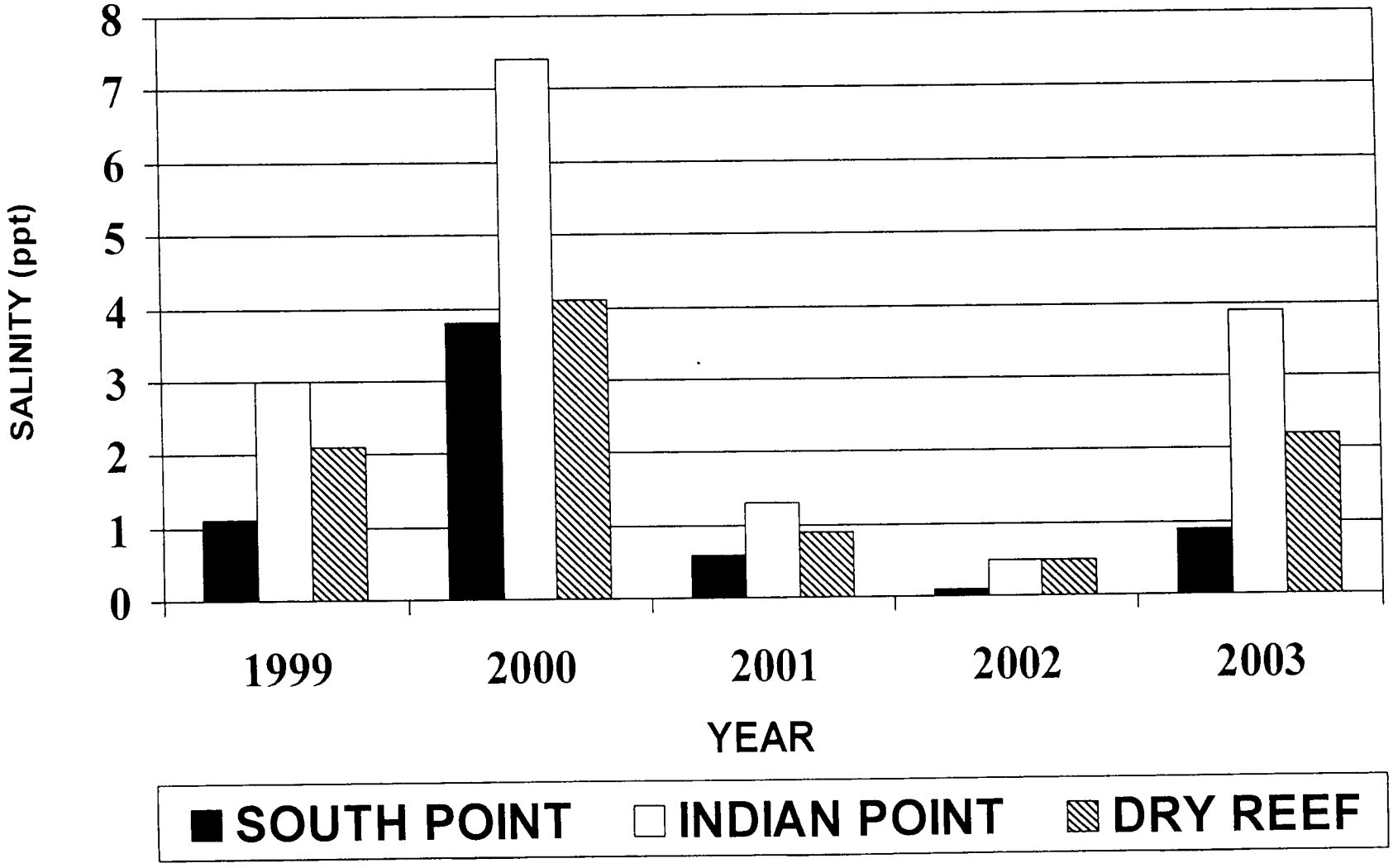
AVERAGE MAY SALINITY

CSA 6



AVERAGE JUNE SALINITY

CSA 6



CSA VII

State of Louisiana

James H. Jenkins, Jr.
Secretary

Department of Wildlife & Fisheries
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(337)491-2579

M.J. "Mike" Foster, Jr.
Governor

MEMORANDUM

TO: PATRICK BANKS, BIOLOGIST SUPERVISOR

FROM: MICHAEL HARBSION, BIOLOGIST SUPERVISOR, CSA VII

DATE: JULY 16, 2003

SUBJECT: CAL. LAKE OYSTER STOCK ASSESSMENT AND 2003-04 SEASON RECOMMENDATION

OYSTER STOCK ASSESSMENT

Calcasieu Lake is divided into two conditionally managed areas by Dept. of Health and Hospitals (DHH): Lower Calcasieu Lake Conditionally Managed Area (LCCMA) and West Cove Conditionally Managed Area (WCCMA). All samples are taken from these two areas - three stations in each area.

Oyster square meter samples were taken on July 8, 2003. The samples indicated an increase in both marketable (>3") and seed oysters (1-3") since last years survey. The marketable oysters availability is 1,169,997 sacks; this is an increase of 388,321 sacks over the 2002 assessment. The seed oyster availability is 530,666 sacks; this is an increase of 212,085 over the 2002 assessment; total sacks of oysters available are 1,700,663; this is an increase of 600,405 sacks over the 2002 assessment.

SEASON RECOMMENDATIONS

CALCASIEU LAKE:

The 2003 oyster stock assessment indicated an increase in both seed and marketable oysters (see above).

The total harvest for the 2002-03 oyster season was 21,386 sacks. This was slightly above 2001-02 harvest of 21,297 and is below average. The 2002-03 harvest was only 1.94% of the total available sacks indicated by the 2002 oyster assessment.

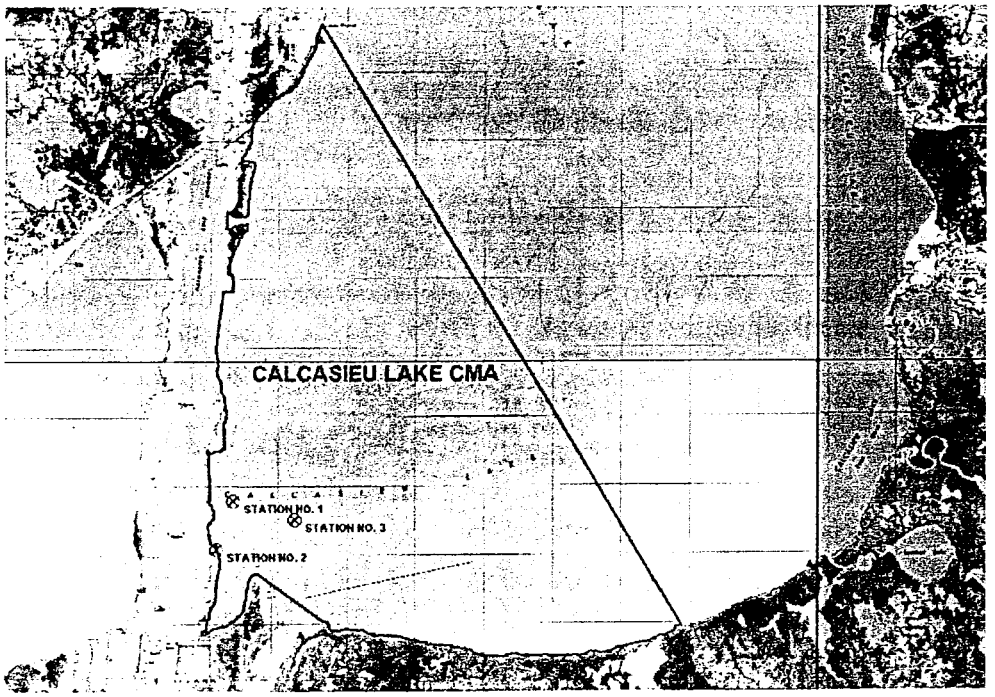
The oyster stocks in Calcasieu Lake remain healthy and in good number. The oyster dredge samples from May and June also indicated the best spat set since I have been in this area (1989).

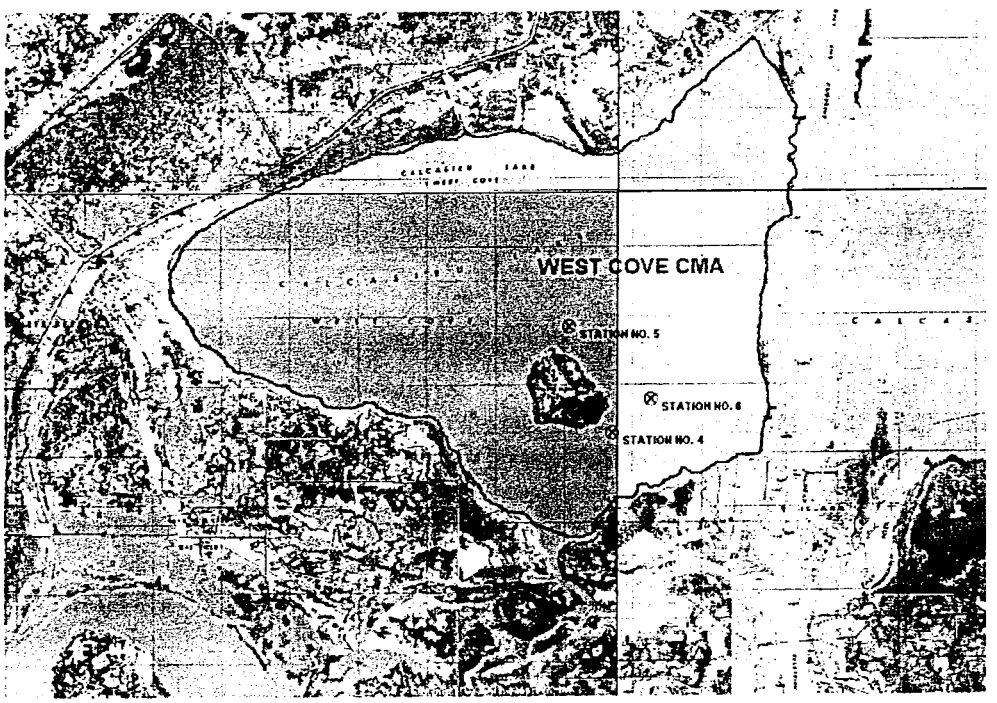
The single most limiting factor in the Calcasieu Lake oyster harvest is the DHH health closures during rainfall events. Second is the demand for oysters.

SABINE LAKE:

Sabine lake has been closed for a number of years by DHH. In the event that DHH would find the water quality in Sabine Lake to be at a level were the lake can be open to harvesting of oysters, I recommend the season be opened.

CALCASIEU LAKE OYSTER AREAS 2003





CALCASIEU LAKE OYSTER STOCK ASSESMENT

JULY 2003

OYSTER NUMBERS

WEST COVE CMA

SIZE	STATION			AVE.
	4	5	6	
≥3"	25	26	54	17.5
1-<3"	15	25	61	16.8

CALCASIEU LAKE CMA

SIZE	STATION			AVE.
	1	2	3	
≥3"	76	34	108	36.3
1-<3"	95	45	78	36.3

OYSTER PRODUCTION AREA

WEST COVE CMA	CALCASIEU LAKE CMA
2,942,076.67 SQ. METERS	3,901,185.57 SQ. METERS

PRODUCTION OF ≥3" OYSTERS

WEST COVE CMA		CALCASIEU LAKE CMA	
OYSTERS:	68,986,341.73	OYSTERS:	141,613,036.19
SACKS:	383,257.5	SACKS:	786,739.1
TOTAL SACKS OF ≥3" OYSTERS:			1,169,996.6

PRODUCTION OF 1 - < 3" OYSTERS

WEST COVE CMA		CALCASIEU LAKE CMA	
OYSTERS:	49,426,888.06	OYSTERS:	141,613,036.19
SACKS:	137,296.9	SACKS:	393,369.5
TOTAL SACKS OF 1-<3" OYSTERS:			530,666.4

TOTAL PRODUCTION

TOTAL OVERALL POTENTAL OF OYSTERS (SACKS):	1,700,663.0

CALCASIEU LAKE OYSTER STOCK ASSESMENT

JUNE 2002

OYSTER NUMBERS

WEST COVE CMA

SIZE	STATION			AVE.
	4	5	6	
≥3″	29	33	34	16.0
1-<3″	23	43	16	13.7

CALCASIEU LAKE CMA

SIZE	STATION			AVE.
	1	2	3	
≥3″	59	31	54	24.0
1-<3″	69	47	8	20.7

OYSTER PRODUCTION AREA

WEST COVE CMA	CALCASIEU LAKE CMA
2,942,076.67 SQ. METERS	3,901,185.57 SQ. METERS

PRODUCTION OF ≥3″ OYSTERS

WEST COVE CMA		CALCASIEU LAKE CMA	
OYSTERS:	47,073,226.72	OYSTERS:	93,628,453.68
SACKS:	261,517.9	SACKS:	520,158.1
TOTAL SACKS OF ≥3″OYSTERS:			781,676.0

PRODUCTION OF OYSTERS

WEST COVE CMA		CALCASIEU LAKE CMA	
OYSTERS:	40,306,450.38	OYSTERS:	80,754,541.30
SACKS:	106,069.6	SACKS:	212,511.9
TOTAL SACKS OF 1-<3″ OYSTERS:			318,581.5

TOTAL PRODUCTION

TOTAL OVERALL POTENTAL OF OYSTERS (SACKS):	1,100,257.5

CALCASEIU LAKE STOCK ASSESSMENT AND HARVEST ESTIMATES

SEASONS	STOCK ASSESSMENT		ESTIMATED SACKS HARVESTED
	MARKETABLE	TOTAL	
1991-92	1,048,882	1,731,367	31,383[1]
1992-93	749,915	1,612,736	27,328
1993-94	748,281	1,238,783	12,818
1994-95	756,525	1,246,480	6,134
1995-56	956,926	1,298,379	29,082
1996-97	618,767	1,083,866	43,441
1997-98	950,979	1,706,510	80,735
1998-99	702,371	1,160,115	39,202[2]
1999-00	614,145	1,032,117	50,592[3]
2000-01	846,176	1,197,311	35,881
2001-02	1,163,750	2,409,482	21,297
2002-03	781,676	1,100,257	21,386
2003-04	1,169,997	1,700,663	

1 - STARED USING DEALER REPORTS FOR LANDINGS.
2 - THE 1999 PORTION OF THE LANDINGS WAS DERIVED FROM PRELIMINARY TRIP TICKET DATA.
3 - TRIP TICKET DATA WAS UNAVAILABLE, CALLED DEALERS FOR LANDINGS.

CALCASIEU LAKE OYSTER SEASONS

SEASON	REGULAR SEASON							EXTENDED SEASON							TOTAL DAYS IN SEASON
	DATES			DHH HEALTH CLOSURES				DATES			DHH HEALTH CLOSURES				
				CAL. L. CMA		WEST COVE CMA					CAL. L. CMA		WEST COVE CMA		
	OPEN DATE	CLOSED DATE	TOTAL DAYS	DAYS OPEN	DAYS CLOSED	DAYS OPEN	DAYS CLOSED	OPEN DATE	CLOSED DATE	TOTAL DAYS	DAYS OPEN	DAYS CLOSED	DAYS OPEN	DAYS CLOSED	
1989-90	11-15	3-15	121	79	42	79	42	3-16	4-30	46	40	6	40	6	165
1990-91	11-15	3-1	147	95	52	95	52	3-30	4-20	34	20	0	0	0	181
1991-92	10-15	3-1	139	69	70	69	70	3-2	4-30	60	45	15	15	15	199
1992-93[1]	10-15	3-1	138	123	15	76	62	3-8	4-3	27	14	13	13	27	165
1993-94	11-1	3-1	121	94	27	61	60	3-2	4-30	60	52	8	8	7	181
1994-95[2]	11-1	3-1	121	69	52	9	112	3-2	4-30	60	21	39	39	60	181
1995-96	10-16	3-1	138	125	13	80	58	3-2	3-31	30	30	0	0	0	-
								4-11	4-30	20	20	0	0	15	188
1996-97	10-16	5-1	197	149	48	83	114	-	-	-	-	-	-	-	197
1997-98	10-16	4-30	197	139	58	101	96	-	-	-	-	-	-	-	197
1998-99[3]	10-16	4-30	197	135	62	77	120	-	-	-	-	-	-	-	197
1999-00	10-16	4-30	197	197	0	182	15	-	-	-	-	-	-	-	197
2000-01	10-15	4-30	198	180	18	106	92	-	-	-	-	-	-	-	198
2001-02	10-15	4-30	198	158	40	61	137	-	-	-	-	-	-	-	198
2002-03	10-15	4-30	198	146	52	66	132	-	-	-	-	-	-	-	198

1 - STARTING WITH THE 92-93 SEASON CALCASIEU LAKE WAS SPLIT INTO TWO UNITS: CAL. LAKE CMA (W/ RIVER STAGE CLOSURE @ 12 FT.) AND WEST COVE CMA (W/ RIVER STAGE CLOSURE @ 7 FT.).

2 - DHH CLOSED THE CAL. LAKE CMA (FROM 11/1-12/10/94) AND WEST COVE (FROM 11/1-1/28/95) WITH A PRECAUTIONARY (POSSIBLE LEAD CONTAMINATION) CLOSURE.

3 - DURING THIS SEASON THE RIVER LEVEL CRITERIA IN THE CAL. LAKE CMA CHANGED FROM 12 TO 13.5 FT.

DERMO

Levels of the oyster parasite, *Perkinsus marinus* in Louisiana oysters west of the Mississippi River, Summer 2003

by

Thomas M. Soniat, Ph.D.

22 July 2003

Among the most significant causes of oyster mortality is the parasite *Perkinsus marinus* (= *Dermocystidium marinum*), which is responsible for annual mortality rates that exceed 50% in most populations of adult eastern oysters, *Crassostrea virginica*. *Perkinsus marinus* was described in 1950 by John Mackin, Malcom Owen and Albert Collier as *Dermocystidium marinum* – hence the common name "Dermo" which is still in use (Mackin et al. 1950).

The discovery of the parasite was the result of investigations (funded by a consortium of oil companies and directed by Texas A&M University) of the impact of oil and gas activities on the Louisiana oyster industry (Mackin and Hopkins, 1962). Extensive studies were conducted on the effects of crude oil, bleedwater, natural gas, drilling mud and seismographic surveys. It was ultimately realized that none of these pollutants or activities could not explain the widespread mortalities of oysters that were observed. It is now known that the parasite is a major cause of mortality from Maine to Mexico (Soniat, 1996).

The main environmental factors which favor the proliferation of the parasite are high water temperatures and high salinities. Thus infections are more intense in the late summer and on the seaward side of estuaries. Management techniques to minimize disease and increase oyster harvest include moving infected oysters to lower salinity, early harvest of infected populations, and even freshwater diversion into high-salinity estuaries. The success of oyster farming often depends on the ability to manage oyster population in the presence of high levels of disease (Soniat and Kortright, 1998).

The standard assay for determining the level of parasitism is the fluid thioglycollate method (Ray, 1966). The length of ten oysters is measured and a small piece of tissue is removed and assayed for disease after incubation in fluid thioglycollate and antibiotics for one week. *P. marinus* intensity is scored using a 0-to-5 scale developed by Mackin (1962), where 0 is no

infection and 5 is an infection in which the oyster tissue is almost entirely obscured by the parasite. Calculations are made of percent infection (PI) and weighted incidence(WI), which is the sum of the disease code numbers divided by the total number of oysters in the sample. A WI of 1.5 could be considered a level at which disease-related mortalities are occurring. For example, Mackin (1962) claims: "a population of live oyster with a weighted incidence of 2.0 contains an intense epidemic, and more than half of the population may be in advanced stages of the disease, with all of the individuals infected."

Oysters for this summer's study were collected from 6 sites west of the Mississippi River. Two sites were in Sister Lake, two in Bay Junop and two in Lake Calcasieu. The Sister Lake sites were Grand Pass (GP) and Old Camp (OC), the Bay Junop sites were Bayou DeWest (DW) and Buckskin Bayou (BS), and the Lake Calcasieu sies were Big Washout (BW) and Northeast Rabbit Island (NR).

Rectal tissue was removed from each of 10 oysters, incubated at room temperature in fluid thioglycollate for about a week, and assayed according to the standard Ray (1966) technique. The level of infection (disease code) was scored from 0 to 5, where 0 is no infection and 5 is near total coverage of the oyster tissue by the parasite. Weighted incidence (WI) was calculated by summing the disease code values and dividing by 10, the number of oysters in the sample.

WI values were 0.033 (GP), 0.066 (OC), 0.06 (DW), 0.00 (BS), 0.267 (BW) and 0.165 (NR). Salinities were relatively low this summer and this was reflected in lower levels of disease. The Lake Calcasieu sites had higher salinities (BW, 15.2 ppt; NR, 13.6 ppt) and higher disease levels than the Sister Lake sites (OC, 6.4 ppt; GP 3.3 ppt) and the Bay Junop sites (DW, 8.6 ppt; BS, 1.7 ppt). **Disease levels from the summer 2003 samples are relatively low and well below critical levels.**

Station	Date sampled	Salinity (ppt)	Temperature (C)	Size range (mm)	Percent infection	Weighted incidence
Grand Pass	06/26/03	3.3	29.7	85-123	10%	0.033
Old Camp	06/26/03	6.4	30.5	88-102	20%	0.066
Bayou DeWest	06/26/03	8.6	30.6	85-105	20%	0.066
Buckskin Bayou	06/26/03	1.7	30.6	89-126	0%	0.000
Big Washout	07/08/03	15.2	29.2	75-110	50%	0.267
NE Rabbit Island	07/08/03	13.6	29.1	75-115	50%	0.165

Literature Cited

Mackin, J.G. 1962. Oyster disease caused by *Dermocystidium marinum* and other microorganisms in Louisiana. Publ. Inst. Mar. Sci. Univ. Tex. 7:132-299

Mackin, J.G. and S.H. Hopkins. 1962. Studies on oyster mortality in relation to natural environments and to oil fields in Louisiana. Publ. Inst. Mar. Sci. Univ. Tex. 7:1-131.

Mackin, J.G., H.M. Owen and A. Collier. 1950. Preliminary note on the occurrence of a new protistan parasite, *Dermocystidium marinum* n.sp. in *Crassostrea virginica* (Gmelin) Science 111:328-329.

Ray S.M. 1966. A review of the culture method for detecting *Dermocystidium marinum* with suggested modifications and precautions. Proc. Natl. Shellfish. Assoc. 54:55-70.

Soniat, T.M. 1996. Epizootiology of *Perkinsus marinus* disease of eastern oysters in the Gulf of Mexico. J. Shellfish Res. 15:35-43.

Soniat, T.M. and E.V. Kortright. 1998. Estimating time to critical levels of *Perkinsus marinus* in eastern oysters, *Crassostrea virginica*. J. Shellfish Res. 17:1071-1080.

2003 DERMO RESULTS
EAST OF RIVER & HACKBERRY BAY

	Seed		Market	
	Prevalence	Weighted Incidence	Prevalence	Weighted Incidence
Bay Gardene				
Lonesome I.				
Mozambique Pt.		PENDING		
N. Black Bay				
S. Black Bay				
Bay Crabe				
Telegraph Pt.				
Cabbage Reef	93%	0.6	80%	0.6
Three Mile	70%	0.3	43%	0.3
Hackberry Bay	63%	0.5	57%	0.4

Mackin Scale (0-5) used to determine incidence.