ANNUAL REPORT
OF THE
BAY SCALLOP PROJECT

1995

JANUARY 1996

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INTRODUCTION

During 1995, members of the Florida Marine Research Institute (FMRI) bay scallop project continued and expanded research efforts initiated during 1994. Funding was equivalent to that provided during the 1994 research year. However, we reallocated 1995 funding to eliminate telephone and field surveys of recreational effort. In addition, we concluded a comparative study of gonadal development within (Homosassa, three year duration) and among (Anclote, Homosassa, and Steinhatchee, one year duration) sites, we expanded field monitoring of adult distribution and juvenile recruitment patterns, and we initiated a comparative study of temporal mortality patterns between Anclote (unharvested) and Steinhatchee (harvested).

ADULT POPULATION SURVEYS

Surveys of adult bay scallop abundance were conducted in Pine Island Sound, Anclote estuary, Homosassa Bay, Steinhatchee, St. Marks estuary, St. Joseph Bay, St. Andrew Bay/Sound, and Pensacola Bay (Figure 1) during June, with follow-up surveys conducted in Homosassa Bay, Steinhatchee, and St. Joseph Bay during September and October. The adult sampling protocol involved SCUBA-assisted diver surveys of twenty randomly-located 300 m transects at each site (see Figures 2-9 for station locations). The total area surveyed on each transect was 600 m^2, equivalent to 12,000 m^2 per research site.

Pine Island Sound: Bay scallops were found at eight of 20 stations in Pine Island Sound, but only two of those stations

yielded more than 1 scallop per transect (Table 1). The mean overall abundance of scallops in Pine Island Sound did not differ significantly between 1994 and 1995 (t'=1.42 versus a critical t' value of 2.09 at alpha = 0.05).

Anclote Estuary: Only one station yielded scallops during the June, 1995 survey (Table 2). This was surprising because scallops were abundant at Anclote during both June and October, 1994. Furthermore, we established a mortality study site in Anclote during late May, 1995, and that site supported an abundant bay scallop population at that time. However, a major red-tide outbreak occurred on the west coast of Florida during early June, 1995. That outbreak may have been either directly or indirectly resposible for the apparent loss of the bay scallop population at Anclote during 1995. The 1994 mean scallop density of 14.65 scallops per 600 m^2 transect was significantly greater than the 0.15 scallops per transect recorded during 1995 (t'=2.42). A fall follow-up survey was not conducted at Anclote due to the lack of scallops recorded from this site during June.

Homosassa: The mean overall density of 4.70 scallops per transect recorded during 1995 was not significantly different from that recorded during 1994 (6.85 scallops per transect; t'=0.82). We sampled only two stations with 10 or more scallops per transect in 1995, whereas four stations had 10 or more scallops per transect during 1994 (Table 3). Otherwise, distribution was similar between the two years. Within 1995, overall density decreased significantly (t'=2.88) between early summer and the

subsequent fall density of 0.50 scallops per transect (Table 4).

Steinhatchee: This site continues to support one of the most abundant bay scallop populations in Florida, but scallop density decreased substantially and significantly during 1995 (27.86 scallops per transect) relative to 1994 (153.40 scallops per transect)(t'=3.25; Table 5). Substantial year-to-year variation in abundance is typical of healthy bay scallop populations, so the observed decrease between 1994 and 1995 should not cause alarm. However, because Steinhatchee waters support the southernmost healthy bay scallop population in Florida, this population must be closely watched. A continuing decline over the next few years may indicate that mechanisms of natural replenishment have failed. Within 1995, population density remained relatively constant; the overall mean density of scallops during early fall in Steinhatchee was 24.80 scallops per transect (Table 6).

St. Marks Estuary: This site is one of two that we first sampled during 1995. Mean overall scallop density was low throughout the estuary; mean abundance was 0.45 scallops per transect and no transect yielded more than 2 scallops (Table 7).

St. Joseph Bay: This bay also continues to support a healthy scallop population. An overall density of 132.2 scallops per transect was the highest recorded for any site during 1995 (Table 8), and was significantly greater than the overall density of scallops recorded for St. Joseph Bay during 1994 (35.85; t'=2.23). Within 1995, density decreased significantly between

early summer and fall (t'=2.84), declining to 18.5 scallops per transect in the fall survey (Table 9).

St. Andrew Bay and Sound: This estuarine system provides a reassuring example of the potential resiliency of natural bay scallop populations. During June, 1994, we recorded very high scallop densities in St. Andrew Bay (56.8/600 m^2), but floods during early July of that year essentially eliminated the population. However, during June, 1995 a healthy population was again present in the bay (Table 10). Overall density decreased significantly between June, 1994 and June, 1995 (t'=3.22), but high natural mortality during late summer 1994 was somewhat ameliorated in the 1995 year-class. Scallop populations in St. Andrew Sound remained stable from 1994 to 1995; the St. Andrew Sound population may act as a source pool for recruits to the St. Andrew Bay population.

Pensacola Bay: We sampled this site for the first time in 1995. Unfortunately, we found no scallops at any station during the 1995 survey.

Summary: During 1995, we recorded no substantial increase in abundance of bay scallops at five of six sites sampled during 1994. Only in St. Joseph Bay was a significant increase in abundance observed, and that positive result was offset by the decrease in abundance of scallops at Steinhatchee. Even more troubling was the total loss of the localized but high-density population at Anclote estuary. We remain optimistic that the

Anclote population will prove as resilient as the St. Andrew Bay population, but only the 1996 survey can answer that question.

REPRODUCTION AND RECRUITMENT

We continue to analyze gonadal samples collected from Homosassa during 1992-1994 and from Steinhatchee and Anclote during 1994. The quantitative techniques that we are applying to this analysis are extremely time consuming (2 hours per animal) and we have been further delayed by modification of the image analysis software program. The 1992 samples are done and we have completed approximately 50% of the 1993 samples. However, the 1994 sample constitutes the majority of slides so we still have considerable work to do on these samples.

Recruitment monitoring continues and we are current in our collection efforts and in our sorting/counting efforts. All sorting and counting is completed through the 1994 samples. Several of the 1995 samples have been sorted and counted, although our 1995 recruitment monitoring effort will continue until late January, 1996.

Recruitment was monitored at 3 sites during 1994-1995: Anclote, Homosassa and Steinhatchee. At each site, three east-west transects consisting of an eastern (depth approximately 0.5 m), middle (depth ~1.3 m) and western (depth ~2.0 m) station were established at northern, central, and southern locations. Three spat collectors, consisting of nylon screen encased within a mesh citrus bag, were deployed at each station. Collectors were sampled and replaced every six weeks; at each station two sets of

collectors, overlapping in time by three weeks, were deployed. Deployment occured in mid-August and continued through mid-February for Homosassa and Steinhatchee, while Anclote collectors were continuously deployed (although non-overlapping between March and July) throughout 1995. Collectors were re-deployed in July at all three sites, and additional collectors were deployed at St. Marks, St. Joseph Bay, St. Andrew Bay, St. Andrew Sound and Santa Rosa Sound (Pensacola Bay) in fall 1995. We also deployed collectors at Rabbit Key Basin in Florida Bay beginning in late January, 1995. Deployment and collection of spat collectors will continue, at all sites from Anclote to Pensacola Bay, until late January, 1996. The Rabbit Key Basin spat monitoring project is ongoing as we attempt to determine the timing of bay scallop recruitment in Florida Bay relative to populations throughout the remainder of Florida.

Recruitment to spat collectors deployed at Anclote began in late August or early September of 1994 but became more intense during October and November (Figure 10). A large recruitment pulse occurred in late November or very early December. Recruitment was minimal through the end of February and was nonexistent from May through August 1995; the remainder of the 1995 samples have not been processed. There was no consistent latitudinal trend but longitudinally more recruits were seen at the middle stations (~56%) than at the east or west stations. No consistent pattern was found between 1994 adult and 1994-1995 recruit distribution and density.

Homosassa recruitment began in late August or early September, increased in intensity during October and November, and finished with a large pulse of recruitment in early December (Fig. 11). From late December to the end of the 1994-95 monitoring effort, recruitment in Homosassa was essentially zero. Recruitment was heaviest along the central and southern transects, and also at the shallow- and mid-depth stations. Adult density was very low in Homosassa during 1994 and 1995, but appeared to be highest in the northern and central regions in 1994 and thus not well correlated with recruit density. Longitudinal densities among adults and recruits were in closer agreement. Recruitment was not observed in August and early September, 1995, and the remainder of the 1995 recruitment samples have not been processed.

Steinhatchee recruitment began in September, 1994, and for the next four months was active but highly erratic in time and space, producing several large pulses before declining somewhat in January, 1995 (Figure 12). Heaviest recruitment levels were recorded at the central and southern transects and also at the mid- and deep-water stations. Adult distribution in June, 1994, did not appear to be closely related to recruit distibution, but once again closer agreement was seen between the longitudinal distribution of adults and recruits. Recruitment in 1995 began in late August and early September, but the remainder of the 1995 recruitment samples have not been processed.

Individual collectors have been deployed at Rabbit Key Basin for as long as 3 months because of difficulty in site visits. Collectors have been processed for February through mid July, and low levels of recruitment have been detected throughout that period. No information on adult density and distribution has been obtained for bay scallops in Rabbit Key Basin or for any other bay scallop population in Florida Bay.

GROWTH

We continue to monitor shell and soft-tissue growth patterns of bay scallops collected from a variety of sites in the Florida panhandle. These data will be useful in determining if growth of bay scallops in the panhandle is delayed relative to that of peninsular populations. Such information will be applicable to any efforts to modify recreational harvest seasonal closure dates. Data analysis and conclusions await the completion of the field sampling effort.

MORTALITY

Mortality experiments were conducted at sites in the Anclote and Steinhatchee basins in 1995. Estimates of natural mortality of bivalves are absent from the literature and yet these estimates are important to effective management efforts. The Anclote and Steinhatchee populations were chosen because they represent two existing management levels, harvested and unharvested, and because 1994 abundances in those populations indicated that there would be sufficient scallops present to detect population declines over short-term periods. At a

selected site in each basin we placed twenty-five 100 m^2 circular plots in late May (Steinhatchee) or early June (Anclote). The plots were placed on a seagrass bed containing a natural population of scallops and the population was not disturbed (Arnold and Marelli, personal observation). Plots were at least 5 m apart. Scallops in each plot were counted approximately once every month.

The Anclote population had a density of 11.2 scallops/100 m^2 on June 1. However, on June 27 all scallops at this experimental site either died or disappeared (Fig. 13), probably due to the effects of an extensive red tide event that persisted in the Tarpon Springs area for weeks.

The Steinhatchee population had a density of 14.4 scallops/100 m^2 on May 23. Over the next three months the density of scallops at this site increased steadily to a final density of 28.6 scallops/100 m^2 on September 7, and then the population was reduced to zero prior to October 10 (Fig. 14). We do not believe the observed increase to be an artifact of censusing methods: the seagrass at this site was short and well dispersed and the substrate was clean, well-sorted sand i.e., ideal for scallop censusing. This site was a higher-energy habitat than the Anclote site and it is apparent that scallops either immigrated into the sample plots or were carried into the plots by tidal and wave-generated currents. We have a poor understanding of the intra-basin dynamics of adult scallop populations, but clearly re-distribution is a significant

phenomenon. Future research on mortality will examine multiple sites and utilize labeled animals.

TEMPERATURE/SALINITY MONITORING

Temperature/salinity data loggers have been deployed at Homosassa since late 1992 and at Steinhatchee and Anclote since late 1994. Bottom water (approximately 0.5 m above the sediment-water interface) temperature (°C) and conductivity (millisiemens) are recorded at two-hour intervals. However, the Brancker data loggers have had many problems, including electronic and mechanical breakdowns and lack of accurate conductivity-salinity conversion equations. We have made considerable progress in overcoming these problems but work remains to be done. Raw temperature and (preliminary) raw salinity data for the Anclote monitoring station are presented in Figures 15 and 16, respectively. Upon successful quality assurance testing, these data will be useful in relating environmental events to bay scallop life history, including patterns of spawning and spat settlement.

RESEARCH DIRECTIONS

During 1996 we need to continue the following bay scallop research programs:

a) monitoring of adult populations at previously selected sites to increase our knowledge of intra- and inter-annual population variation within sites;

b) recruitment monitoring to determine if recruitment is correlated with adult abundance and to determine if recruitment

limitation is preventing the recovery of depleted bay scallop populations;

c) monitoring of water column physical parameters (temperature and salinity) to determine the relationship between those physical parameters and scallop life history traits;

d) experimental research on the patterns and timing of mortality of adult bay scallop populations in fished versus unfished areas.

We do not intend to initiate any major new research directions during the coming year. However, we continue to suffer from a lack of information regarding the genotypic relationships among Florida bay scallop populations. Genotypic information is needed to establish a framework for the interpretation of recruitment patterns, for understanding differences in growth and other life history traits between panhandle and peninsular populations, and for managing and implementing restoration efforts in the coming years. During the June, 1995 adult scallop surveys we collected samples in anticipation of a genetic study; those samples remain to be analyzed. We also lack adequate information, and mechanisms for gathering information, concerning the recreational bay scallop fishery. The magnitude and impact of that fishery remain unknown. We suggest that a bay scallop "stamp", similar to that required for the recreational harvest of lobster in the Florida Keys, could provide at least some of that information. Finally, we need to develop a clear philosophical and mechanistic approach

to restoration of bay scallop populations should natural restoration prove inadequate.

Figure 1: Map of Florida, showing sampling sites and other important locations referenced in the text.

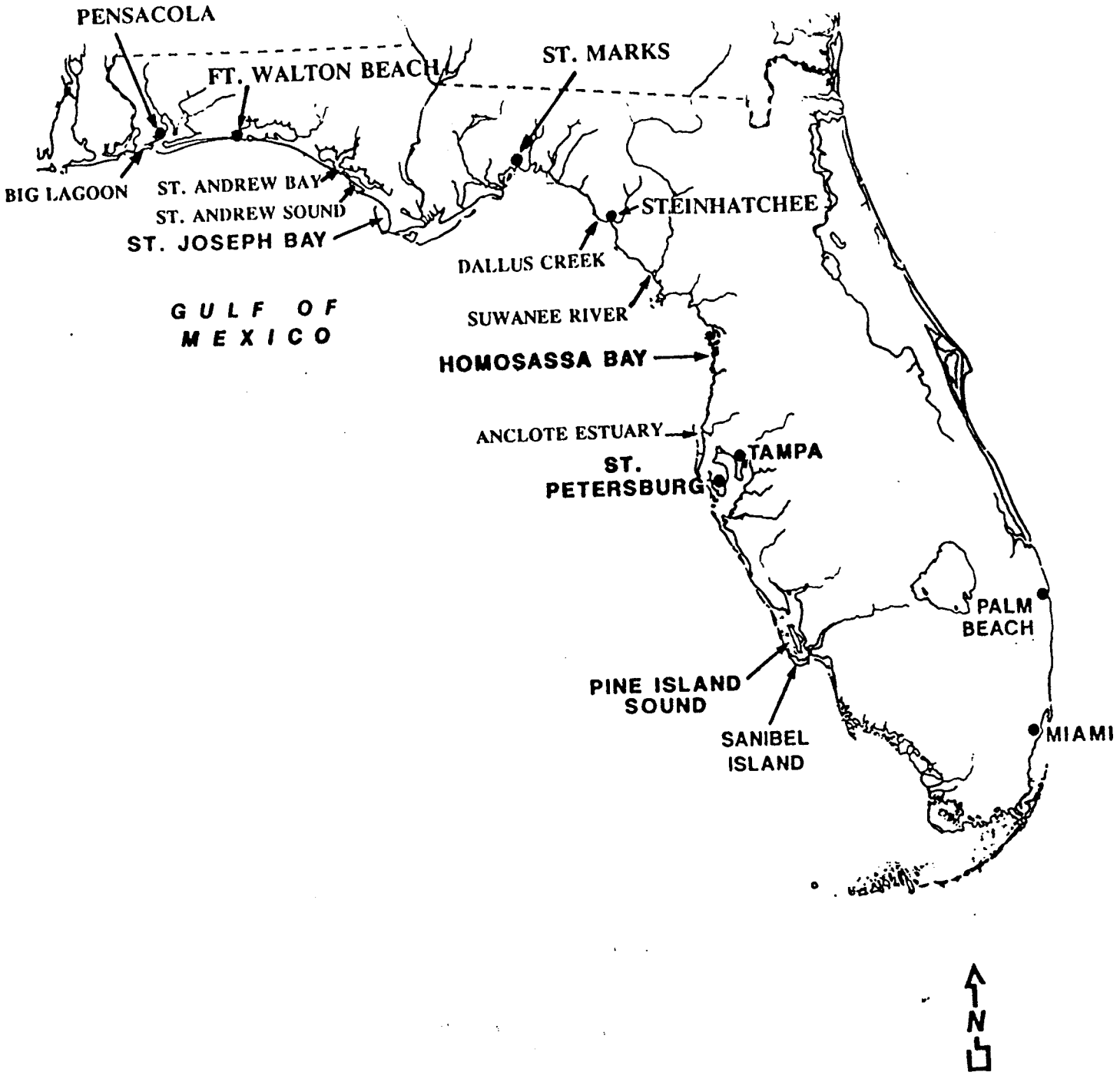

PENSACOLA
FT. WALTON BEACH
ST. MARKS
BIG LAGOON
ST. ANDREW BAY
ST. ANDREW SOUND
ST. JOSEPH BAY
STEINHATCHEE
DALLUS CREEK
SUWANEE RIVER
GULF OF MEXICO
HOMOSASSA BAY
ANCLOTE ESTUARY
TAMPA
ST. PETERSBURG
PALM BEACH
PINE ISLAND SOUND
SANIBEL ISLAND
MIAMI
N

Figure 2: Map of the Pine Island Sound study site, showing the location of the twenty sampling stations occupied during June, 1995, for bay scallop adult density monitoring.

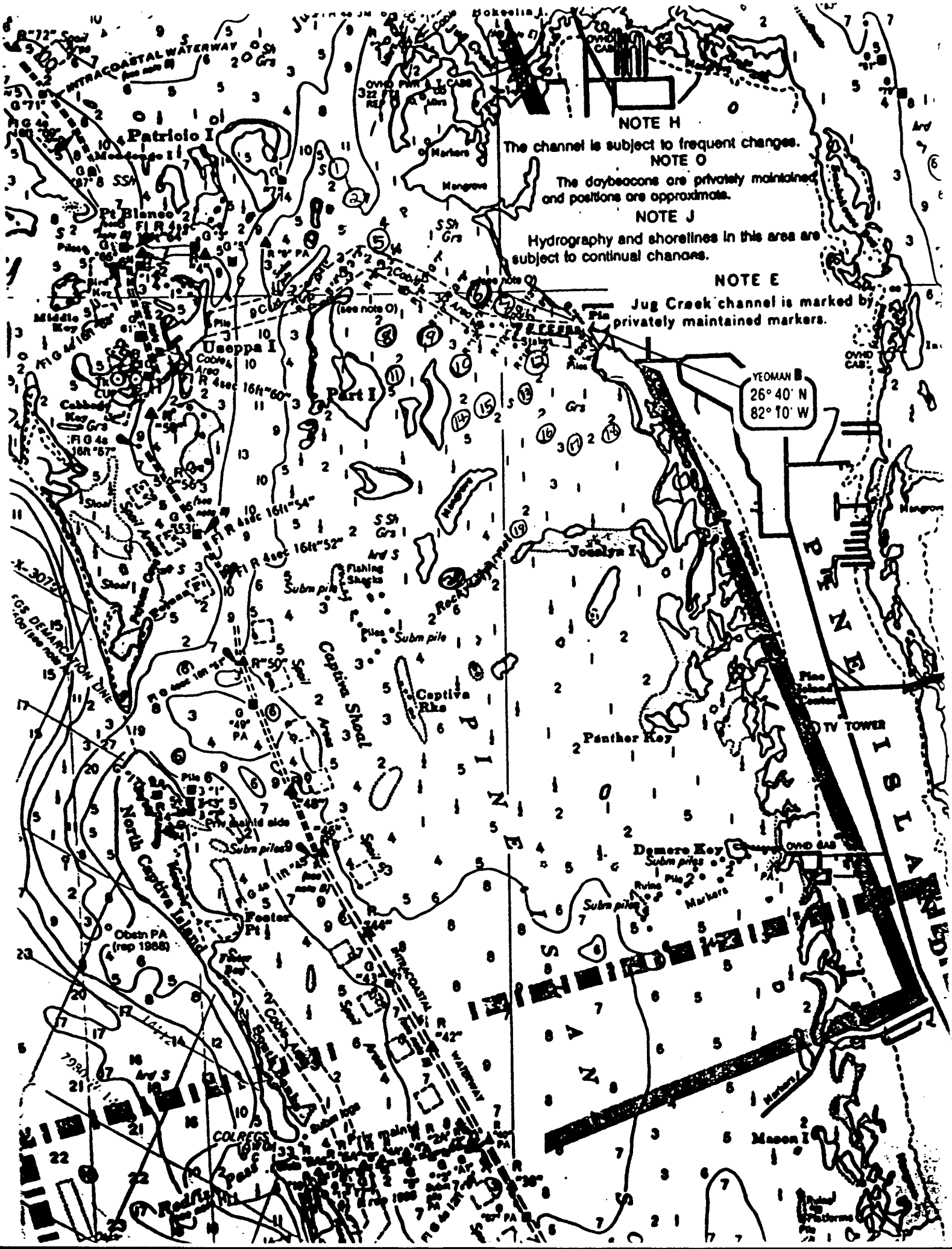

NOTE H
The channel is subject to frequent changes.
NOTE O
The daybeacons are privately maintained and positions are approximate.
NOTE J
Hydrography and shorelines in this area are subject to continual changes.
NOTE E
Jug Creek channel is marked by privately maintained markers.
YEOMAN B
26° 40' N
82° 10' W
Patriot I
Pt Blanco
Useppa I
Part I
Jessalyn I
Captiva Shoal
Captiva Rks
Panther Key
Demere Key
Foster Pt
North Captiva Island
Boca Grande Channel
COLREGS
Redfish Pt
Mason I
TV TOWER
PINE ISLAND SOUND
INTRACOASTAL WATERWAY

Figure 3: Map of the Anclote estuary study site, showing the location of the twenty sampling stations occupied during June, 1995, for bay scallop adult density monitoring.

Anclote

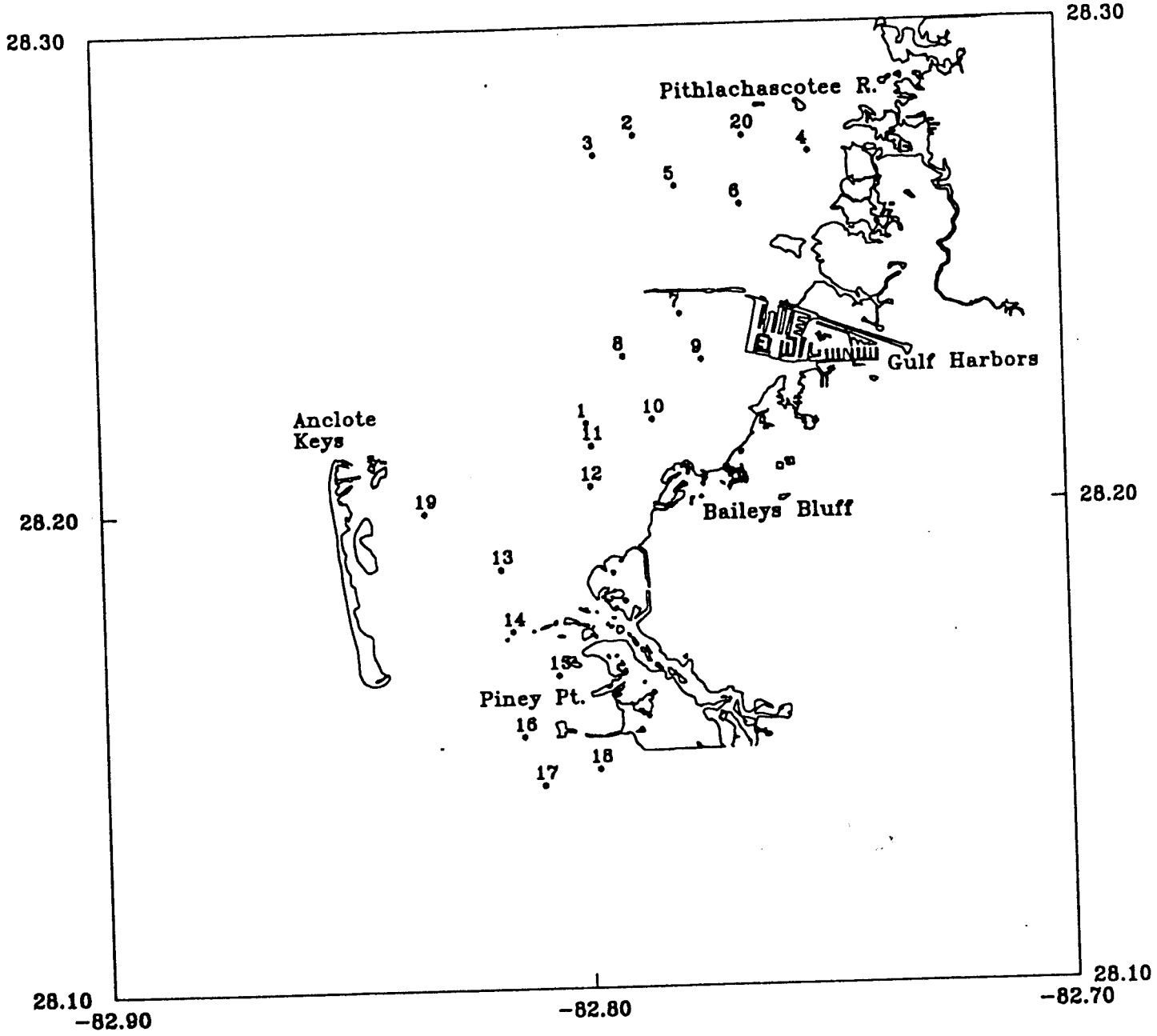

28.30
28.30
Pithlachascotee R.
2
20
3
4
5
6
8
9
Gulf Harbors
1
10
11
Anclote
Keys
12
19
28.20
28.20
Baileys Bluff
13
14
15
Piney Pt.
16
18
17
28.10
28.10
-82.90
-82.80
-82.70

Figure 4: Map of the Homosassa Bay study site, showing the location of the twenty sampling stations occupied during June and October, 1995, for bay scallop adult density monitoring.

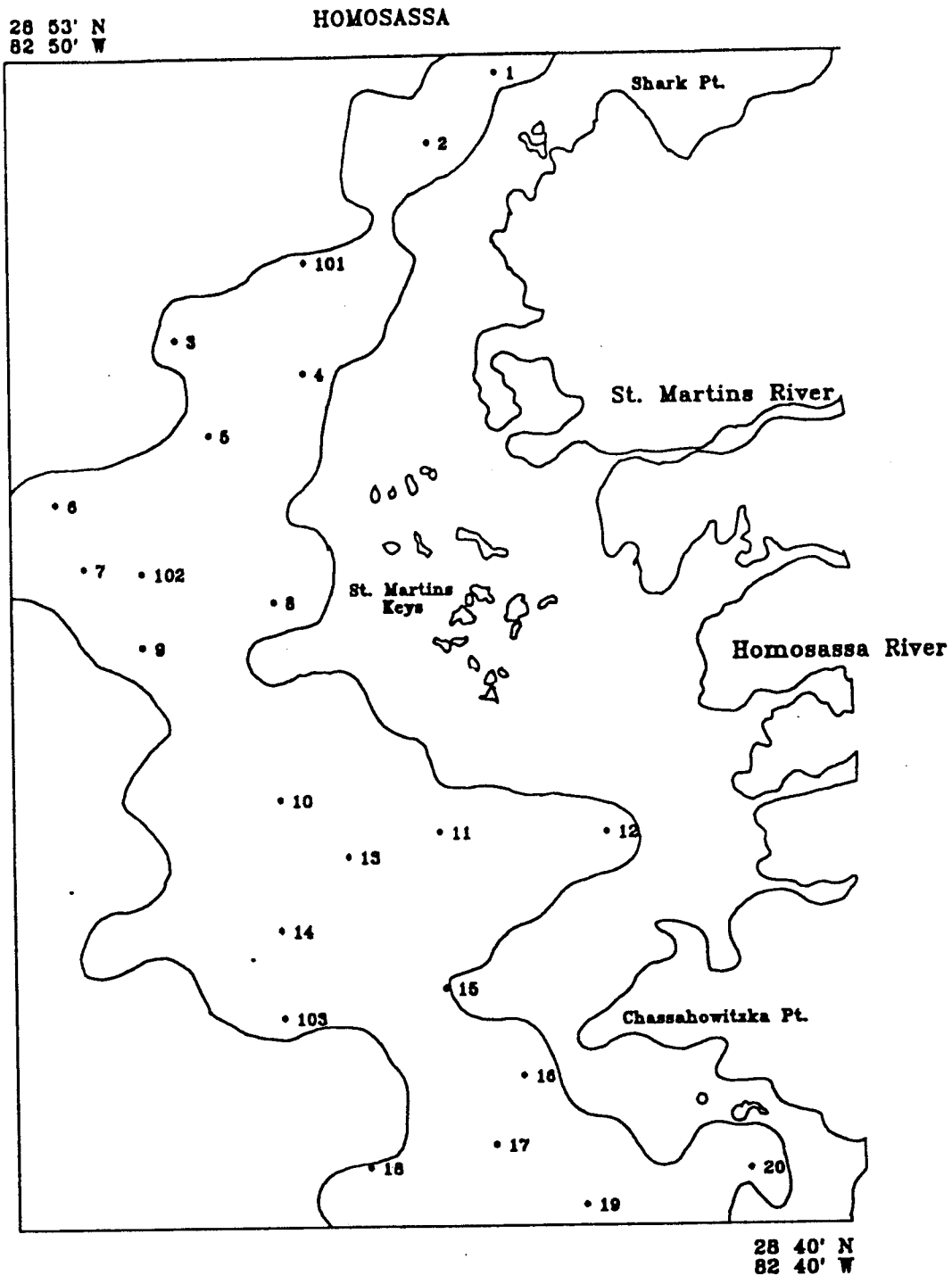

28 53' N
82 50' W
HOMOSASSA
Shark Pt.
St. Martins River
St. Martins Keys
Homosassa River
Chassahowitzka Pt.
1
2
101
3
4
5
6
7
102
8
9
10
11
12
13
14
15
103
16
17
18
19
20
28 40' N
82 40' W

Figure 5: Map of the Steinhatchee study site, showing the location of the twenty sampling stations occupied during June and October, 1995, for bay scallop adult density monitoring.

Steinhatchee

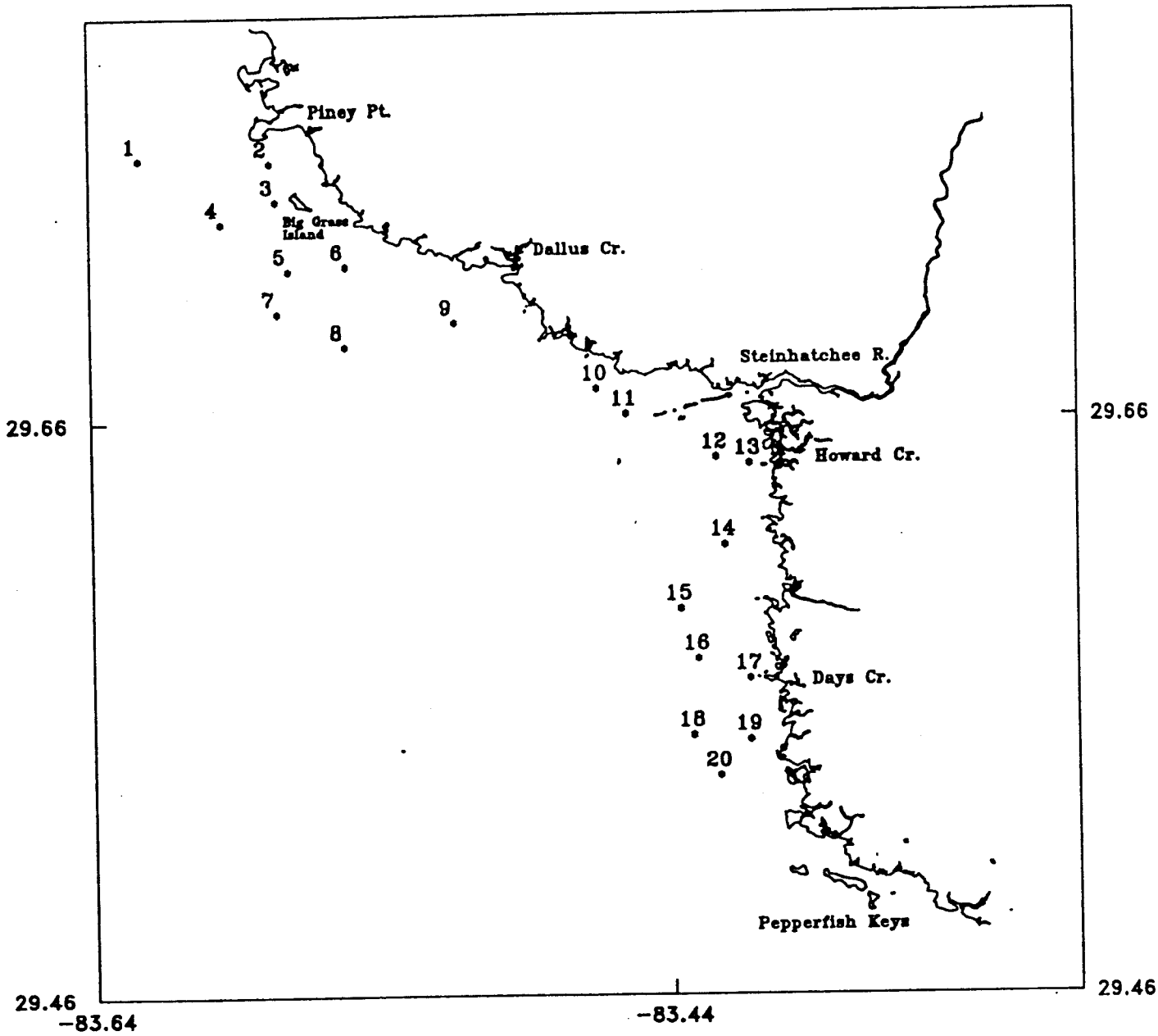


Figure 6: Map of the St. Marks study site, showing the location of the twenty sampling stations occupied during June, 1995, for bay scallop adult density monitoring.

...ted to October 17,
...American Datum
...dditional update in-
...e appendix A.

NOTE C

...maintained markers are reported
...south end main entrance channels
...l through Ochlockonee Bay to the
Sopchoppy River.

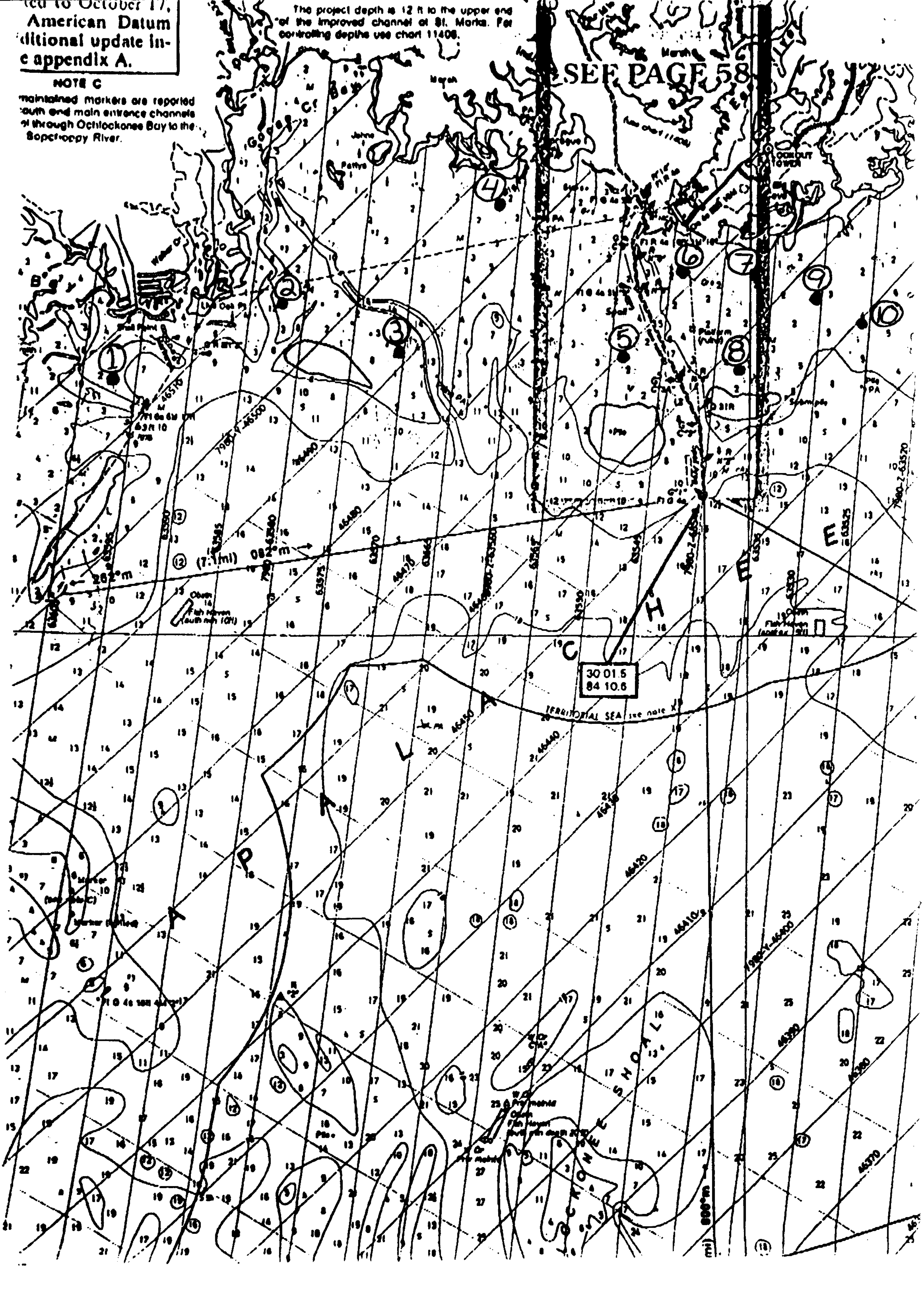
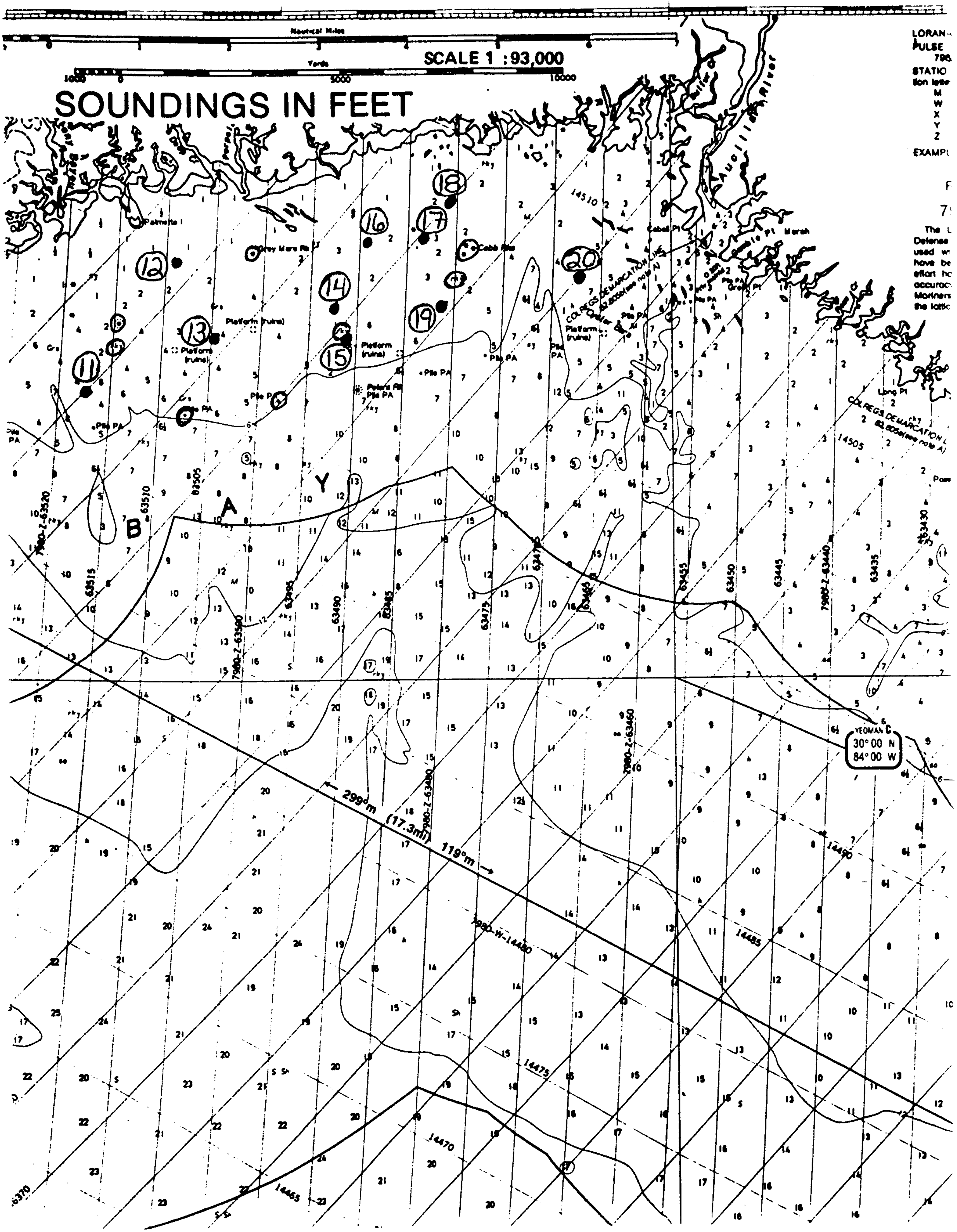


Figure 6 (cont): Map of the St. Marks study site, showing the location of the twenty sampling stations occupied during June, 1995, for bay scallop adult density monitoring.



Nautical Miles
Yards
SCALE 1 : 93,000
SOUNDINGS IN FEET
Palmetto I
Grey Mare Rk
Cobb Rks
Cabell Pt
Platform (ruins)
Pile PA
Peters Rk
Pile PA
COLREGS DEMARCATION LINE
Long Pt
Aucilla River
A
B
Y
YEOMAN
30° 00 N
84° 00 W
299°m
(17.3mi)
119°m
7980-W-14480
7980-Z-63460
7980-Z-63480
7980-Z-63500
7980-Z-63520
7980-Z-63440
14510
14505
14490
14485
14475
14470
14465
LORAN-
PULSE
STATIO
EXAMPL

Figure 7: Map of the St. Joseph Bay study site, showing the location of the twenty sampling sites occupied during June and October, 1995, for bay scallop adult density monitoring.

St. Joseph Bay

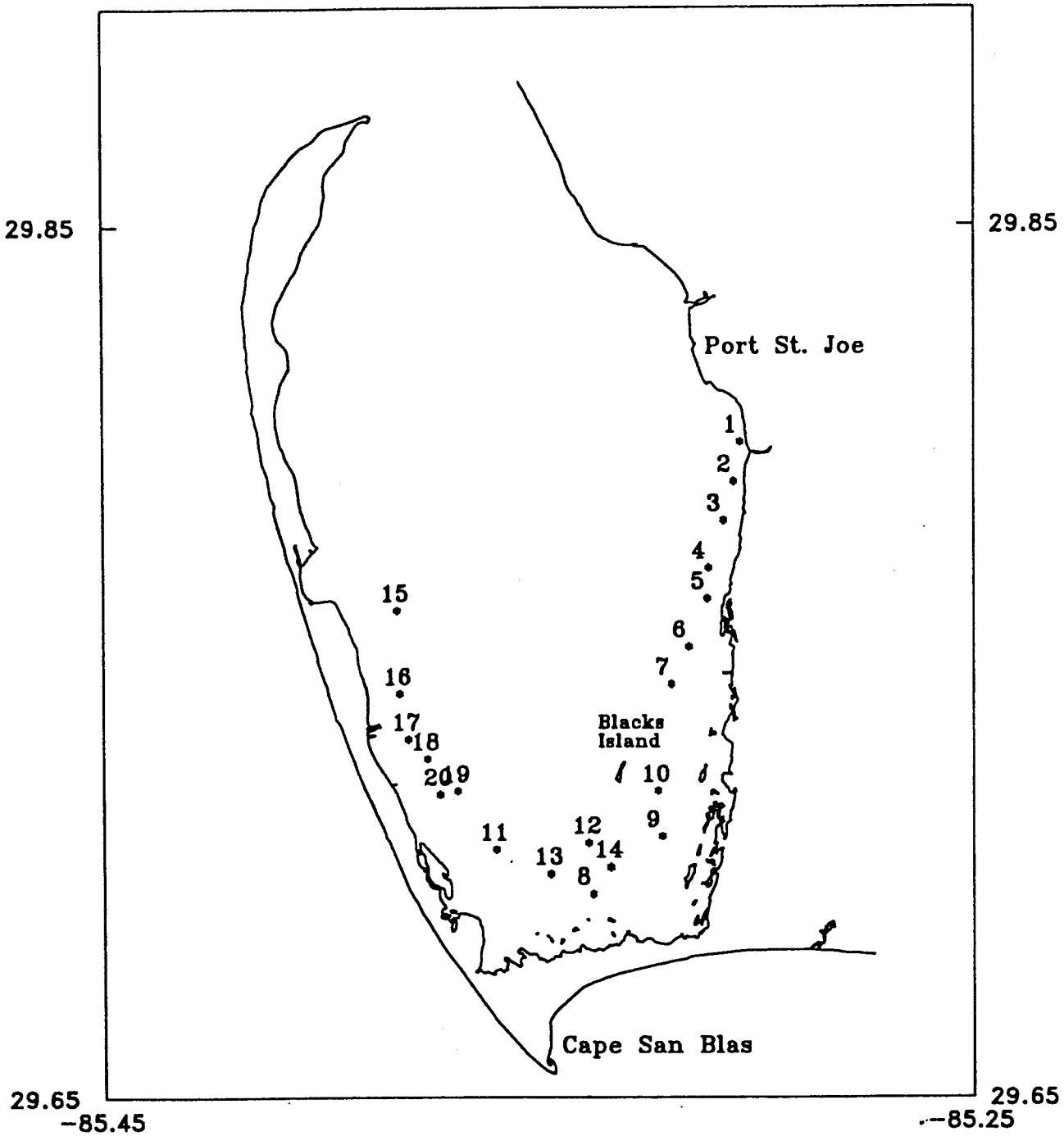


Figure 8: Map of the St. Andrew Bay and St. Andrew Sound study site, showing the location of the twenty sampling stations occupied during June, 1995, for bay scallop adult density monitoring.

St. Andrews Bay & Crooked Island Sound

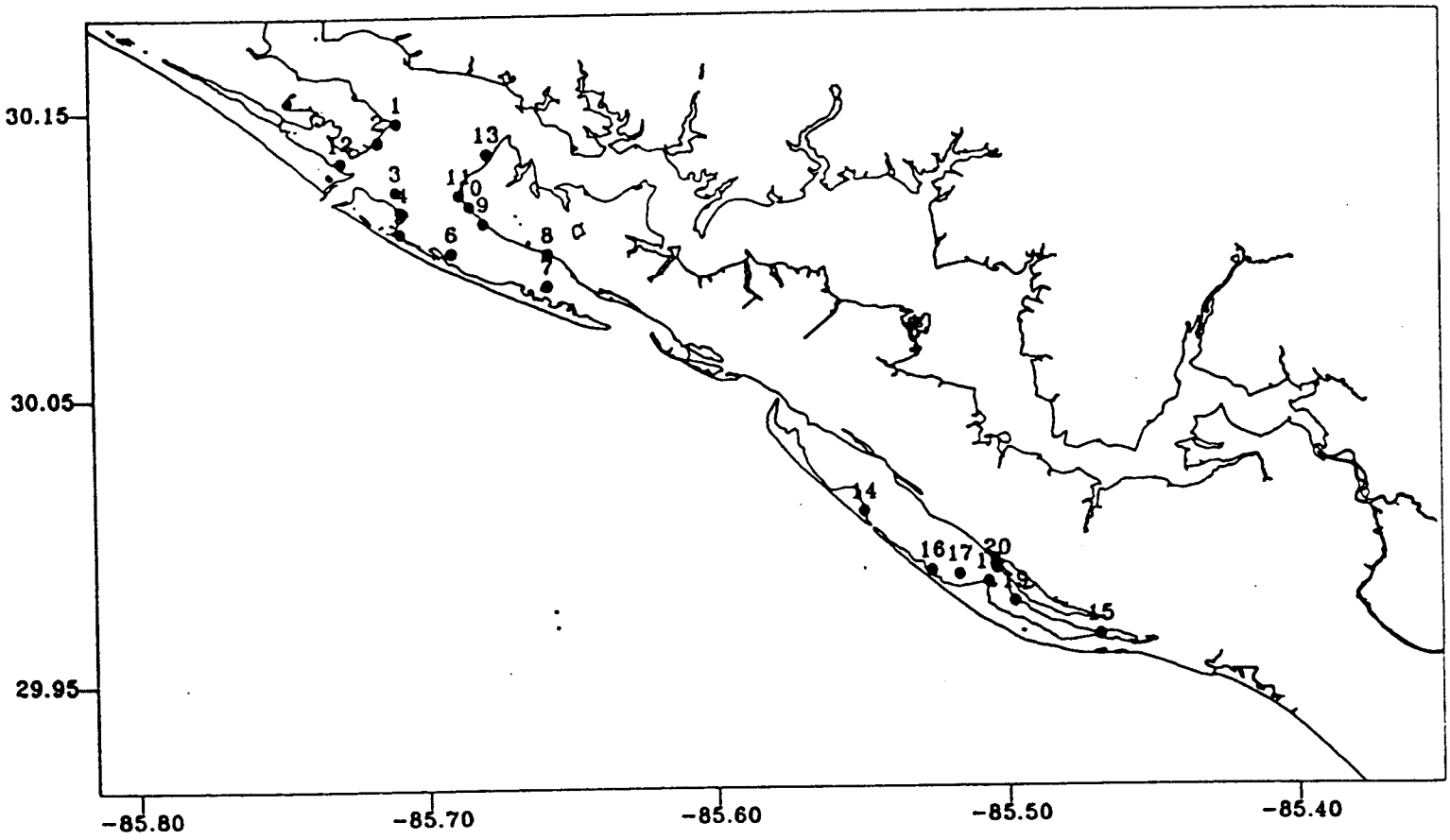


Figure 9: Map of the Pensacola Bay study site, showing the location of the twenty sampling stations occupied during June, 1995, for bay scallop adult density monitoring.

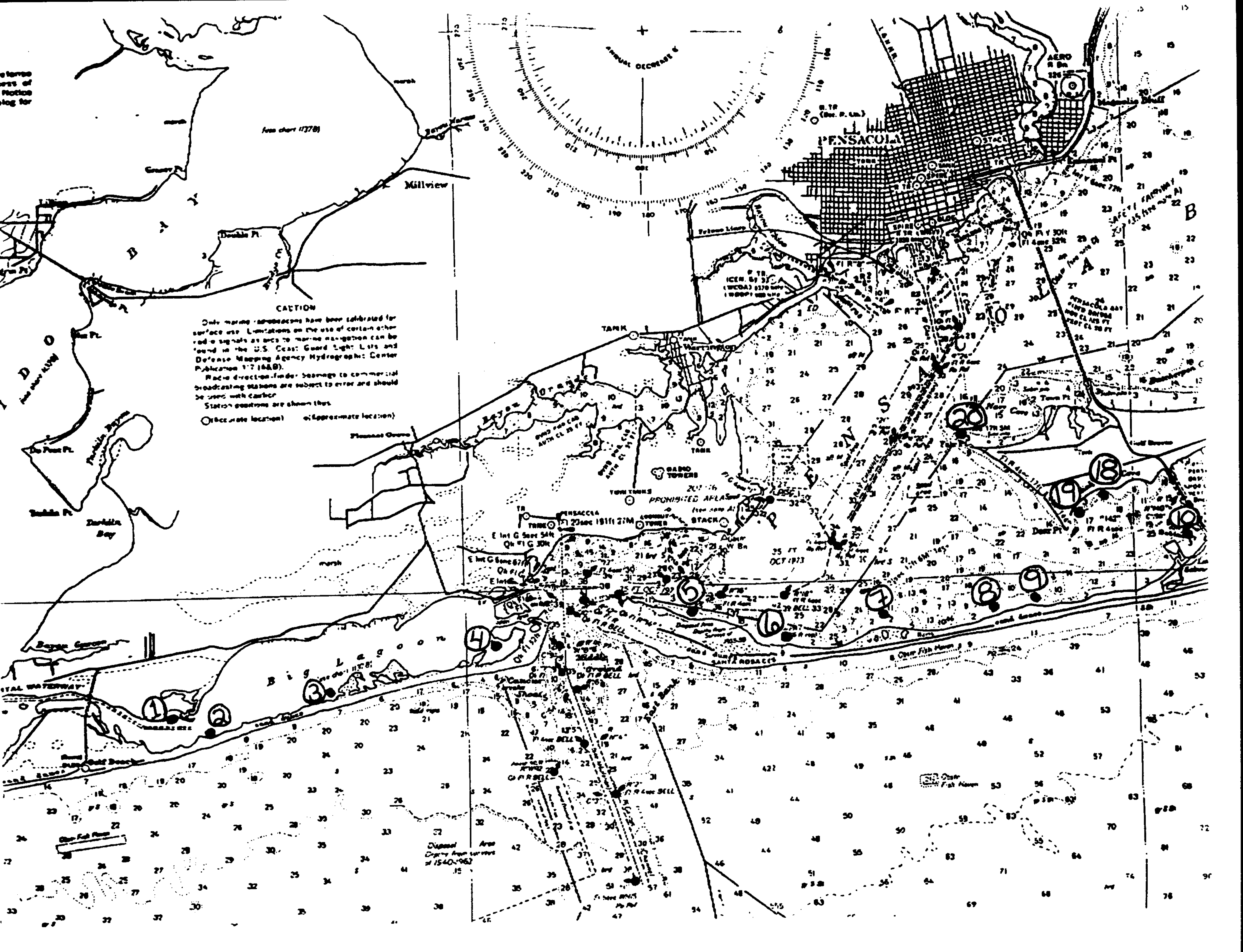

PENSACOLA
Millview
Warrington
CAUTION
Only marine radiobeacons have been calibrated for surface use. Limitations on the use of certain other radio signals as aids to marine navigation can be found in the U.S. Coast Guard Light Lists and Defense Mapping Agency Hydrographic Center Publication 117 (A&B).
Radio direction-finder bearings to commercial broadcasting stations are subject to error and should be used with caution.
Station positions are shown thus:
(Accurate location) (Approximate location)
TANK
RADIO TOWERS
PROHIBITED AREA
STACK
B
A
Big Lagoon
Magnolia Bluff
SANTA ROSA
Bayou Grande
1
2
3
4
5
6
7
8
9
10
18
19
20

Figure 9 (cont): Map of the Pensacola Bay study site, showing the location of the twenty sampling stations occupied during June, 1995, for bay scallop adult density monitoring.

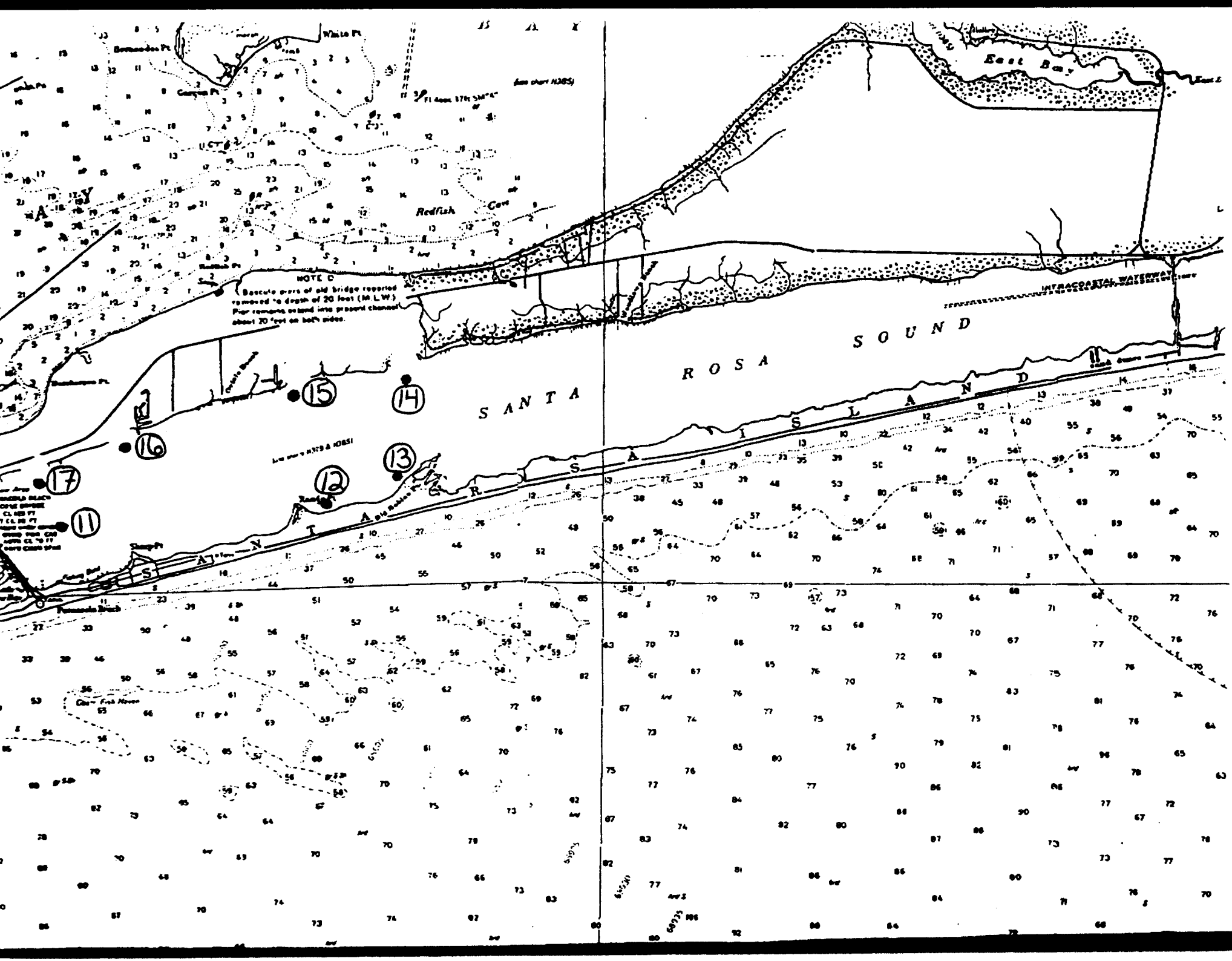

SANTA ROSA SOUND
ISLAND
Redfish Cove
East Bay
INTRACOASTAL WATERWAY
NOTE C
Pensacola Beach
Casino Beach
15
14
16
13
12
17
11

Figure 10: Recruitment rate of bay scallops to spat collectors located at eastern (E), middle (M), and western (W) stations at each of three [north (N), central (C), and south (S)] transects at the Anclote estuary study site.

ANCLOTE SCALLOP RECRUITMENT

1994-95

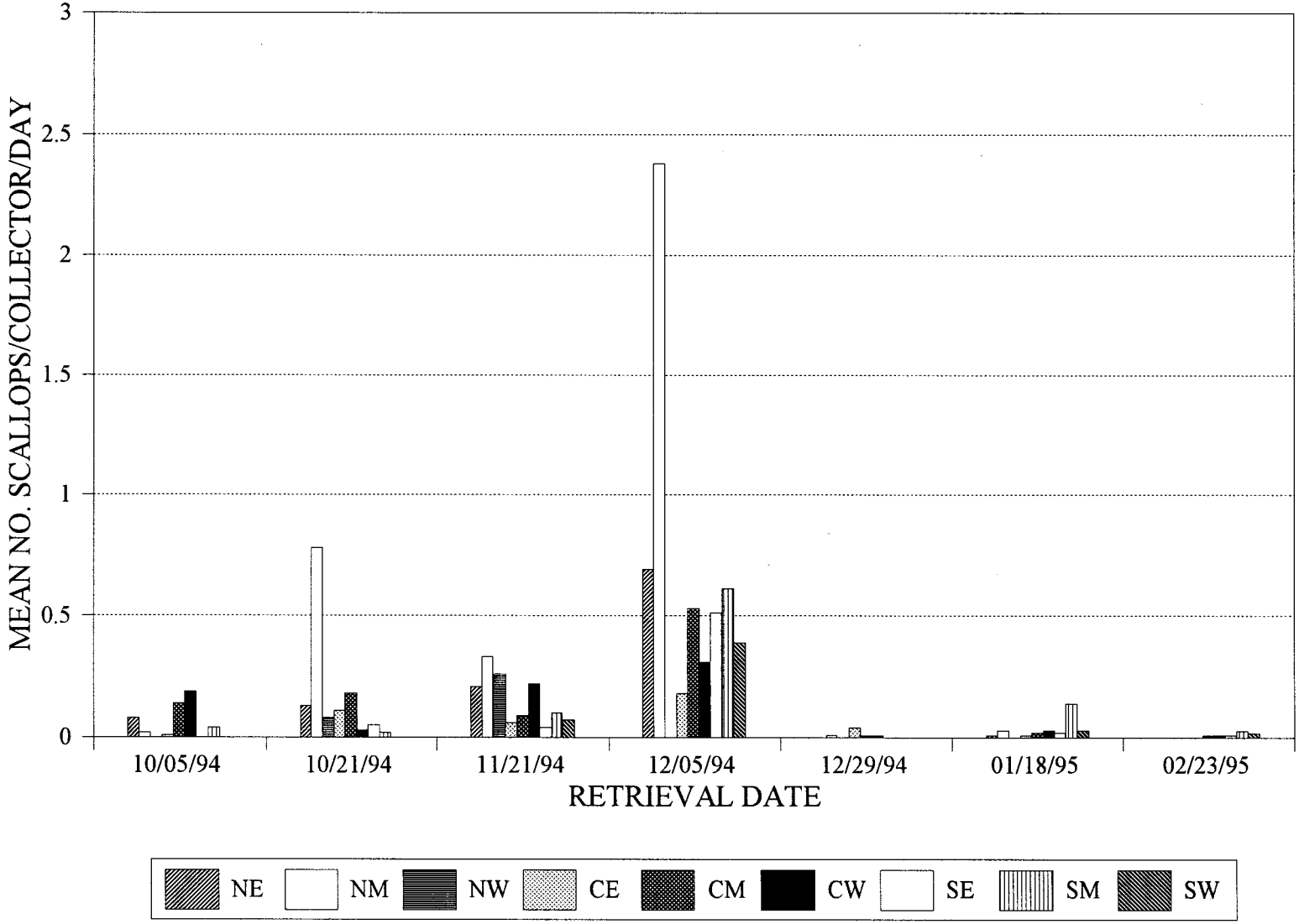


Figure 11: Recruitment rate of bay scallops to spat collectors located at eastern (E), middle (M), and western (W) stations at each of three [north (N), central (C), and south (S)] transects at the Homosassa Bay study site.

HOMOSASSA SCALLOP RECRUITMENT

1994-95

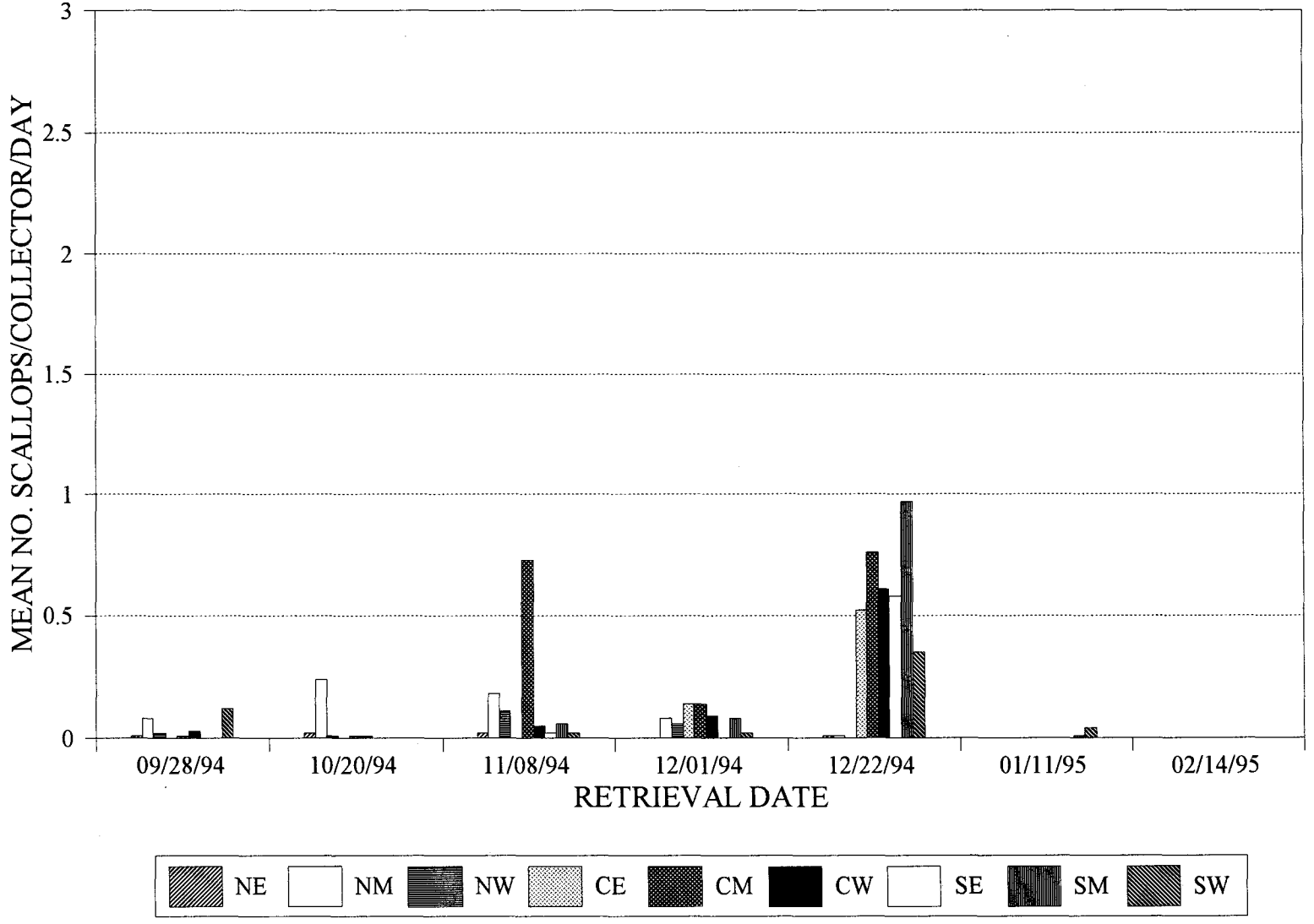


Figure 12: Recruitment rate of bay scallops to spat collectors located at eastern (E), middle (M), and western (W) stations at each of three [north (N), central (C), and south (S)] transects at the Steinhatchee study site.

STEINHATCHEE SCALLOP RECRUITMENT

1994-95

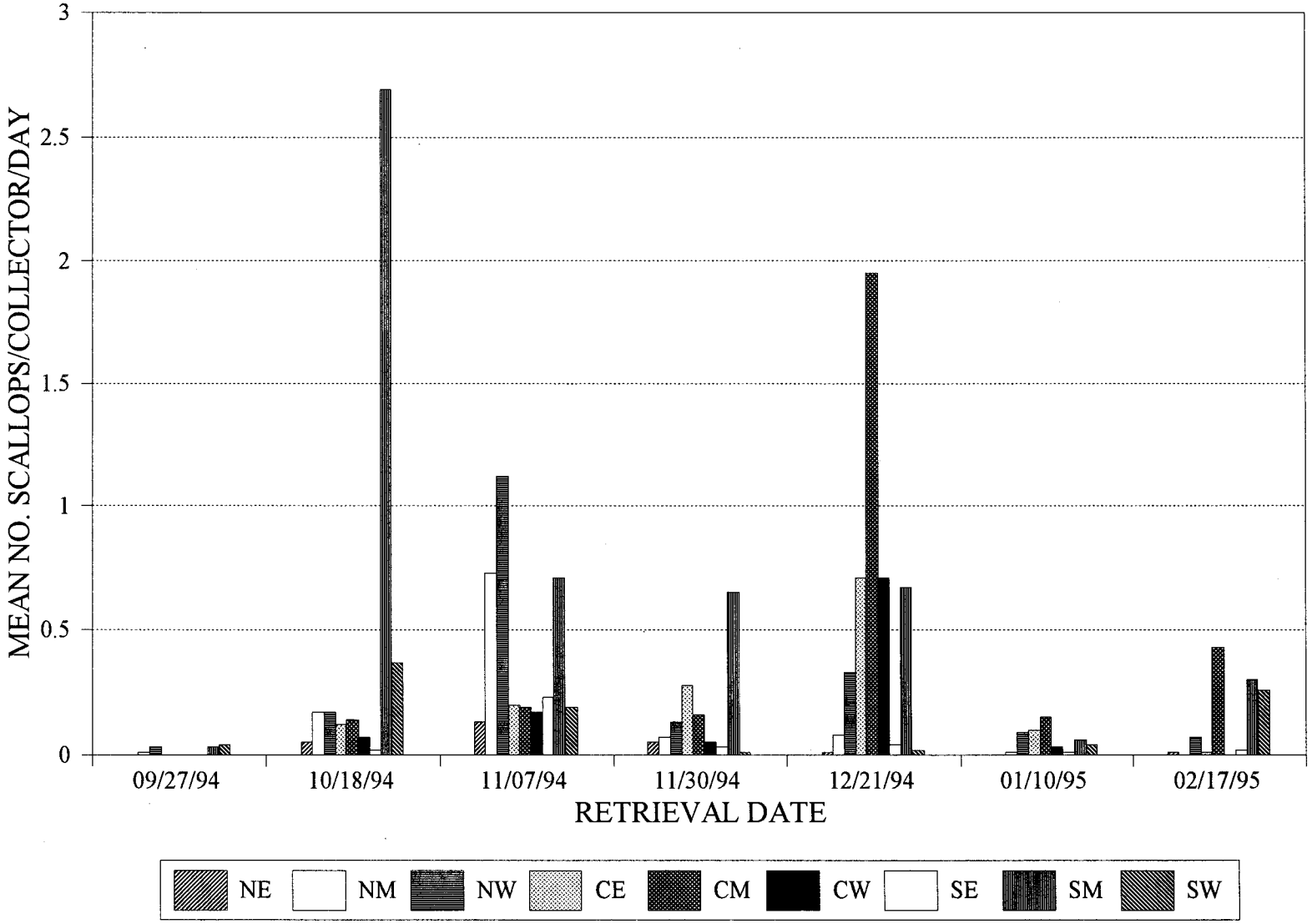


Figure 13. Mean number of bay scallops per 100 m^2 quadrat on each of two sampling dates at the Anclote estuary study site.

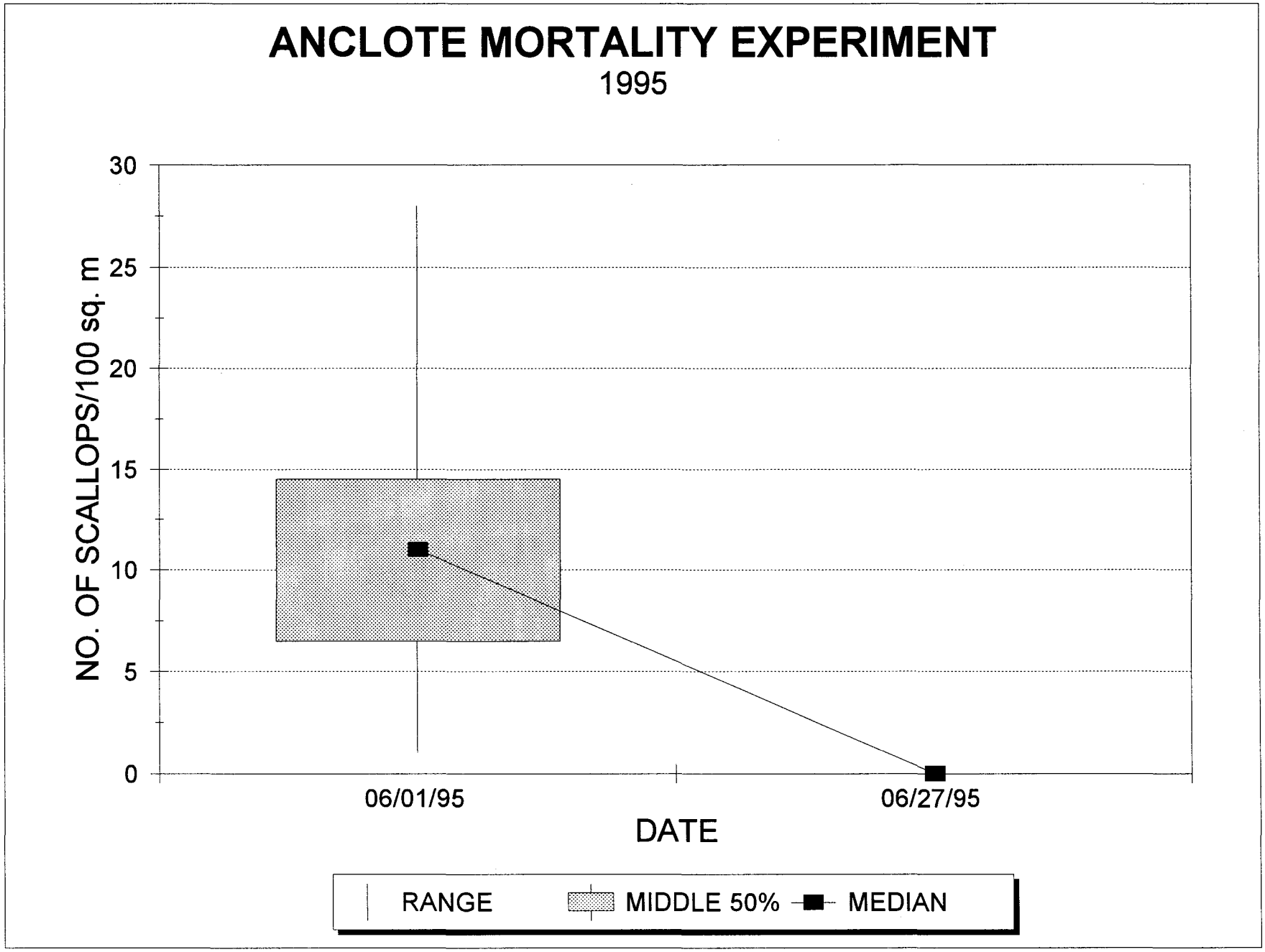

ANCLOTE MORTALITY EXPERIMENT
1995
NO. OF SCALLOPS/100 sq. m
30
25
20
15
10
5
0
06/01/95
06/27/95
DATE
RANGE
MIDDLE 50%
MEDIAN

Figure 14. Mean number of bay scallops per 100 m^2 quadrat on each of five sampling dates at the Steinhatchee study site.

STEINHATCHEE MORTALITY EXPERIMENT

1995

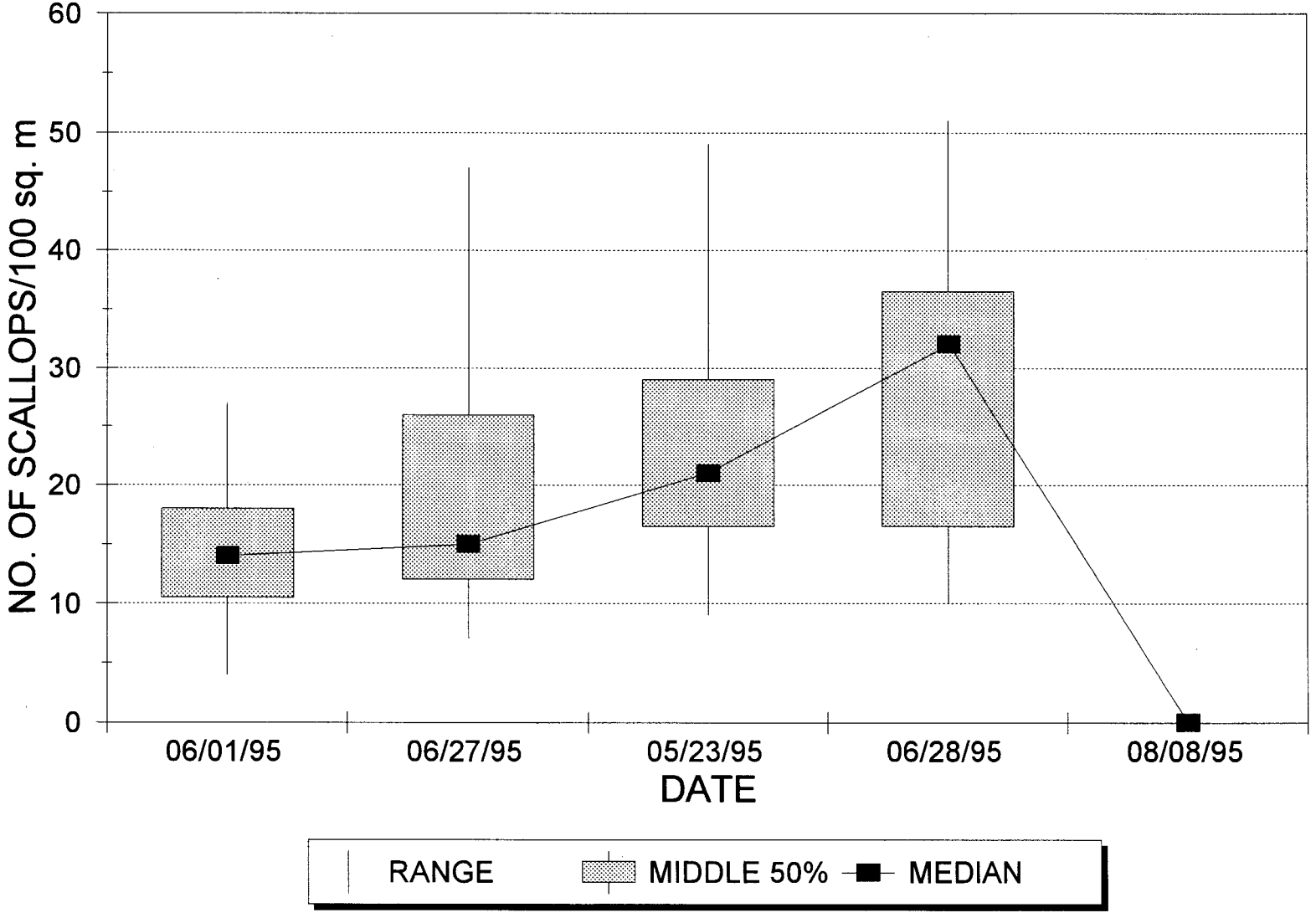


Figure 15. Bottom water temperature, measured at two hour intervals at the Anclote estuary study site.

Anclote Estuary
Bottom Water Temperature

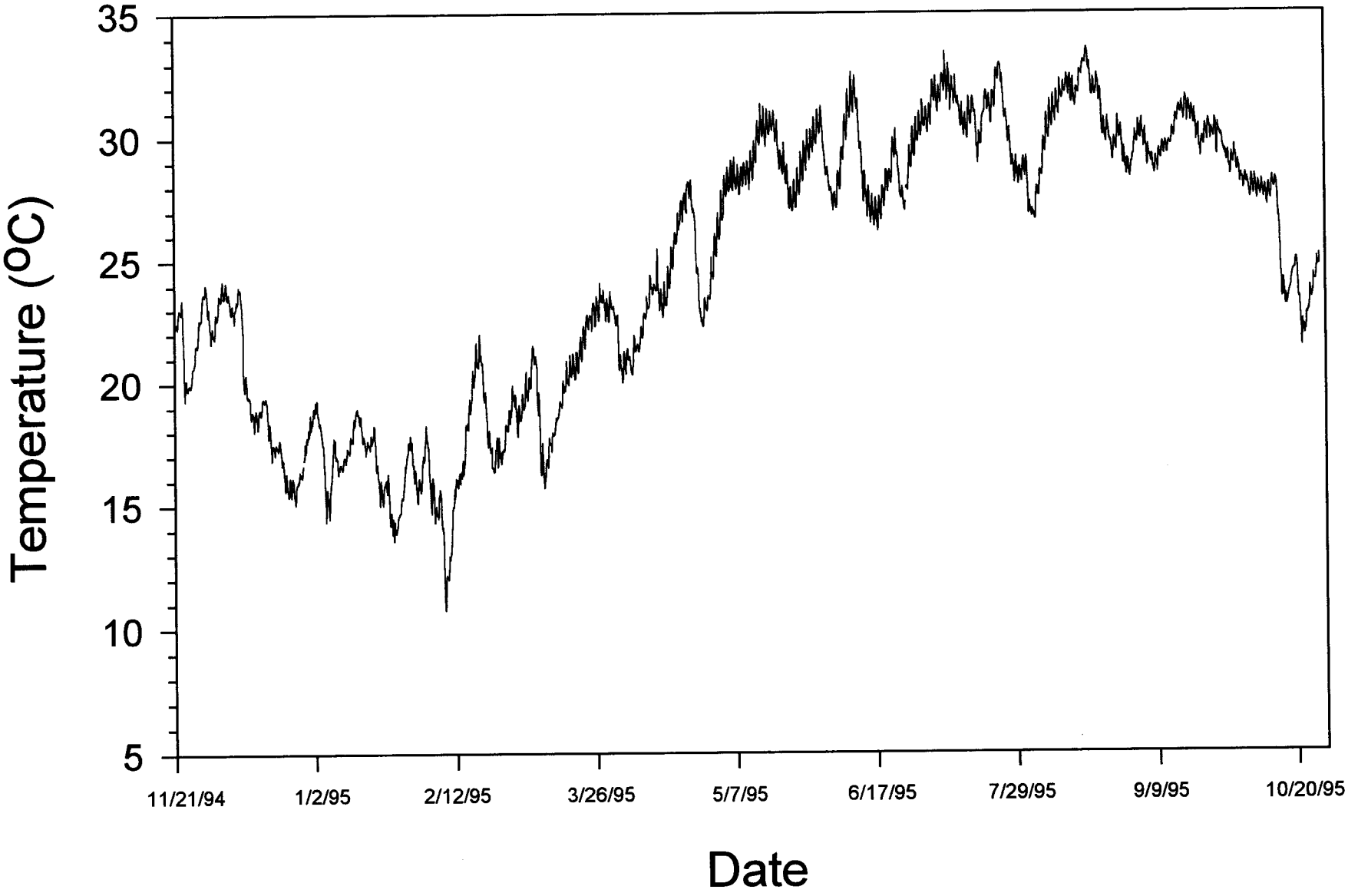


Figure 16. Bottom water salinity, measured at two hour intervals at the Anclote estuary study site.

Anclote Estuary
Bottom Water Salinity

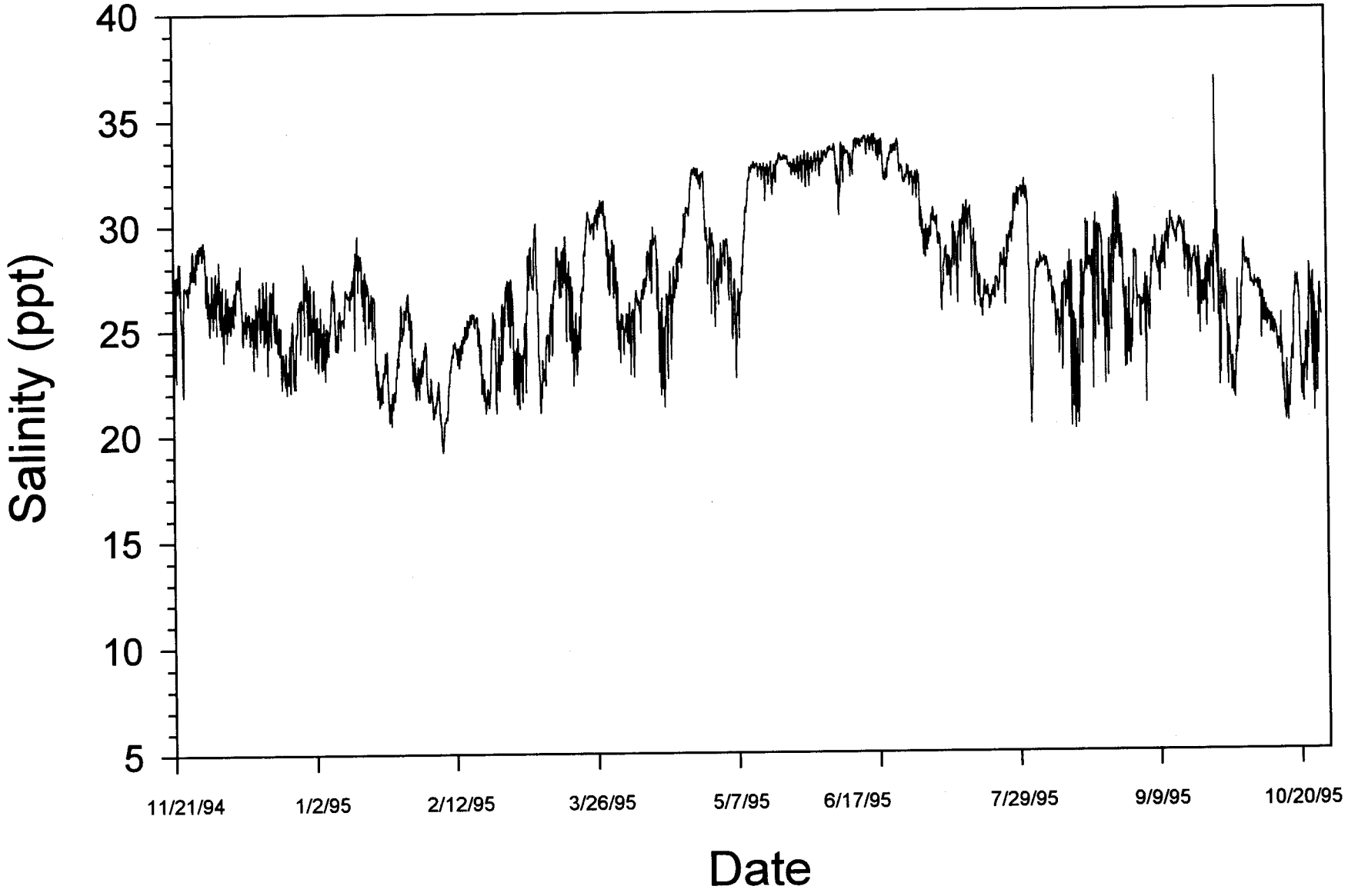


Table 1: Adult bay scallop density at each of 20 stations sampled at the Pine Island Sound study site during June, 1995.

JUNE 1995 BAY SCALLOP SURVEY
SCALLOPS PER STATION, PINE ISLAND SOUND

STATION LOCATION	STATION	SCALLOPS/ $600m^2$
PNI	1	0
PNI	2	0
PNI	3	0
PNI	4	0
PNI	5	0
PNI	6	0
PNI	7	0
PNI	8	0
PNI	9	0
PNI	10	1
PNI	11	1
PNI	12	34
PNI	13	9
PNI	14	0
PNI	15	1
PNI	16	1
PNI	17	0
PNI	18	0
PNI	19	1
PNI	20	1

Mean: $2.45/600m^2$
Sd: 7.69
n=20

Table 2: Adult bay scallop density at each of 20 stations sampled at the Anclote estuary study site during June, 1995.

JUNE 1995 BAY SCALLOP SURVEY
SCALLOPS PER STATION, ANCLOTE

STATION LOCATION	STATION	SCALLOPS/ 600m^2
ANC	1	0
ANC	2	0
ANC	3	0
ANC	4	0
ANC	5	0
ANC	6	0
ANC	7	0
ANC	8	0
ANC	9	3
ANC	10	0
ANC	11	0
ANC	12	0
ANC	13	0
ANC	14	0
ANC	15	0
ANC	16	0
ANC	17	0
ANC	18	0
ANC	19	0
ANC	20	0

Mean: 0.15/600m^2
Sd: 0.67
n=20

Table 3: Adult bay scallop density at each of 20 stations sampled at the Homosassa Bay study site during June, 1995.

JUNE 1995 BAY SCALLOP SURVEY
SCALLOPS PER STATION, HOMOSASSA

STATION LOCATION	STATION	SCALLOPS/ $600m^2$
HOM	1	0
HOM	2	9
HOM	3	9
HOM	4	4
HOM	5	14
HOM	6	1
HOM	7	2
HOM	8	27
HOM	9	7
HOM	10	3
HOM	11	1
HOM	12	1
HOM	13	6
HOM	14	0
HOM	15	1
HOM	16	3
HOM	17	1
HOM	18	3
HOM	19	2
HOM	20	0

Mean: 4.70/$600m^2$
Sd: 6.43
n=20

Table 4: Adult bay scallop density at each of 20 stations sampled at the Homosassa Bay study site during Fall, 1995.

FALL 1995 BAY SCALLOP SURVEY
SCALLOPS PER STATION, HOMOSASSA

STATION LOCATION	STATION	SCALLOPS/ 600m^2
HOM	1	0
HOM	2	0
HOM	3	0
HOM	4	0
HOM	5	0
HOM	6	2
HOM	7	0
HOM	8	0
HOM	9	1
HOM	10	4
HOM	11	0
HOM	12	0
HOM	13	0
HOM	14	0
HOM	15	3
HOM	16	3
HOM	17	0
HOM	18	0
HOM	19	0
HOM	20	0

Mean: 0.50/600m^2
Sd: 1.15
n=20

Table 5: Adult bay scallop density at each of 20 stations sampled at the Steinhatchee study site during June, 1995.

JUNE 1995 BAY SCALLOP SURVEY
SCALLOPS PER STATION, STEINHATCHEE

STATION LOCATION	STATION	SCALLOPS/ 600m^2
STN	1	13
STN	2	48
STN	3	16
STN	4	14
STN	5	14
STN	6	22
STN	7	3
STN	8	1
STN	9	44
STN	10	0
STN	11	0
STN	12	0
STN	13	8
STN	14	4
STN	15	1
STN	16	30
STN	17	23
STN	18	3
STN	19	313
STN	20	27
STN	21	1

Mean: 27.86/600m^2
Sd: 66.86
n=21

Table 6: Adult bay scallop density at each of 20 stations sampled at the Steinhatchee study site during Fall, 1995.

FALL 1995 BAY SCALLOP SURVEY
SCALLOPS PER STATION, STEINHATCHEE

STATION LOCATION	STATION	SCALLOPS/ 600m^2
STN	1	6
STN	2	105
STN	3	25
STN	4	18
STN	5	25
STN	6	12
STN	7	3
STN	8	0
STN	9	11
STN	10	6
STN	11	0
STN	12	30
STN	13	7
STN	14	25
STN	15	1
STN	16	58
STN	17	47
STN	18	0
STN	19	112
STN	20	5

Mean: 24.80/600m^2
Sd: 32.74
n=20

Table 7: Adult bay scallop density at each of 20 stations sampled at the St. Marks study site during June, 1995.

JUNE 1995 BAY SCALLOP SURVEY
SCALLOPS PER STATION, ST. MARKS

STATION LOCATION	STATION	SCALLOPS/ $600m^2$
STM	1	0
STM	2	1
STM	3	0
STM	4	0
STM	5	0
STM	6	0
STM	7	1
STM	8	2
STM	9	0
STM	10	0
STM	11	0
STM	12	0
STM	13	1
STM	14	1
STM	15	1
STM	16	1
STM	17	1
STM	18	0
STM	19	0
STM	20	0

Mean: $0.45/600m^2$
Sd: 0.60
n=20

Table 8: Adult bay scallop density at each of 20 stations sampled at the St. Joseph Bay study site during June, 1995.

JUNE 1995 BAY SCALLOP SURVEY
SCALLOPS PER STATION, ST. JOE BAY

STATION LOCATION	STATION	SCALLOPS/ $600m^2$
SJB	1	1
SJB	2	1
SJB	3	6
SJB	4	2
SJB	5	67
SJB	6	205
SJB	7	114
SJB	8	348
SJB	9	118
SJB	10	711
SJB	11	5
SJB	12	233
SJB	13	195
SJB	14	270
SJB	15	11
SJB	16	14
SJB	17	44
SJB	18	25
SJB	19	17
SJB	20	257

Mean: $132.2/600m^2$
Sd: 175.47
n=20

Table 9: Adult bay scallop density at each of 20 stations sampled at the St. Joseph Bay study site during Fall, 1995.

FALL 1995 BAY SCALLOP SURVEY
SCALLOPS PER STATION, ST. JOE BAY

STATION LOCATION	STATION	SCALLOPS/ $600m^2$
SJB	1	1
SJB	2	0
SJB	3	1
SJB	4	0
SJB	5	1
SJB	6	0
SJB	7	1
SJB	8	150
SJB	9	2
SJB	10	21
SJB	11	3
SJB	12	37
SJB	13	55
SJB	14	37
SJB	15	0
SJB	16	0
SJB	17	16
SJB	18	4
SJB	19	31
SJB	20	10

Mean: $18.50/600m^2$
Sd: 34.95
n=20

Table 10: Adult bay scallop density at each of 20 stations sampled at the St. Andrew Bay/St. Andrews Sound study site during June, 1995.

JUNE 1995 BAY SCALLOP SURVEY
SCALLOPS PER STATION, ST. ANDREW BAY/SOUND

STATION LOCATION	STATION	SCALLOPS/ 600m^2
SAB	1	4
SAB	2	13
SAB	3	16
SAB	4	8
SAB	5	1
SAB	6	20
SAB	7	6
SAB	8	13
SAB	9	8
SAB	10	0
SAB	11	5
SAB	12	2
SAB	13	2
SAB	14	2
SAB	15	9
SAB	16	1
SAB	17	0
SAB	18	3
SAB	19	1
SAB	20	1

Mean: 5.75/600m^2
Sd: 5.82
n=20