ANNUAL REPORT
OF THE
BAY SCALLOP PROJECT

2002

MARCH 2003

William S. Arnold
Stephen P. Geiger
Melanie Parker
Sarah C. Peters
Janessa Cobb
April Granholm
Cynthia A. Meyer
Melissa M. Harrison

Florida Fish and Wildlife Conservation Commission
Florida Marine Research Institute
100 Eighth Avenue SE
St. Petersburg, Florida 33701-5095

Phone: (727) 896-8626
Fax: (727) 893-1374
e-mail: bill.arnold@fwc.state.fl.us

INTRODUCTION

This report summarizes bay scallop (*Argopecten irradians*) research conducted by the Florida Marine Research Institute's Molluscan Fisheries research program during calendar year 2002. First, we report the results of adult population surveys conducted at a variety of sites along the west coast of Florida between Pine Island Sound in the south and Pensacola Bay in the northwest. The intent of those surveys is to monitor the status of representative scallop populations in Florida and to assess changes in population abundance that may occur in response to management and restoration efforts instituted by the State of Florida since 1995. Second, we present the results of recruitment monitoring studies that are ongoing in the nearshore zone between Anclote and Crystal River and in St. Joseph Bay. Third, we provide information on recreational bay scallop fishing effort that was gathered from helicopter and fixed-wing aircraft flyovers, conducted on various dates throughout the 2002 harvesting season, in the area between Homosassa and Steinhatchee. Finally, we present preliminary information on body component indices derived from scallops sampled on various dates and at various sites between Anclote and Pensacola. Together, these data can be used to assess the impact of recreational fishing on bay scallop populations inhabiting the nearshore zone along the Florida west coast and to evaluate the appropriateness of the opening and closing dates of the recreational bay scallop harvest season.

The year 2002 marked a turning point in scallop management on the Florida west coast. For the first time since the 1994 emergency closure, the Florida Fish and Wildlife Conservation Commission (FWC) reopened some areas that were previously closed to scallop harvest. The reopened areas extend from the Suwannee River south to the Pasco-Hernando county line and include the important scalloping grounds offshore from Crystal River and Homosassa (Figure 1). Concomitant with that reopening, FWC closed the area from the Mexico Beach Canal west to the Florida-Alabama border (Figure 1), an area that historically has supported harvestable bay scallop populations but which has supported few scallops in recent years. Those two events (the opening and the closure) have created research opportunities for the Molluscan Fisheries research group. In the newly reopened area, we report on data collected to estimate the impact of fishing pressure on scallop abundance. In the northwest Florida closure area, we have initiated monitoring of adult population abundance in Pensacola Bay (and are continuing our monitoring efforts

in St. Andrew Bay) and will use the resultant data to evaluate the dynamics of natural scallop populations within the framework of no harvest and no restoration.

ADULT ABUNDANCE

Consistent with each of the previous surveys (e.g., Arnold et al., 1999), our 2002 adult scallop sampling protocol consisted of diver transect surveys at replicate and randomly-located stations at each of nine study sites (see below). At each station, we deployed one diver on each side of a 300 m transect line and searched the area within 1 m on each side of the line along its length. All scallops within that 2 m x 300 m area were counted and shell height (SH = maximum distance from umbo to ventral margin) determined for up to 30 specimens.

Surveys of adult bay scallop abundance were conducted in Pine Island Sound, Anclote, Hernando, Homosassa, Cedar Key, Steinhatchee, St. Joseph Bay, St. Andrew Bay/Sound, and Pensacola Bay (Figure 1) during June. Follow-up surveys were conducted at the Anclote, Hernando, Homosassa, Steinhatchee, and St. Joseph Bay study sites during September and October. Twenty stations were sampled each season at each site (except Cedar Key) and, with the exception of Pine Island Sound (where the sampling stations were relocated after the 1994 survey and again after the 1999 survey), stations were repetitively sampled each year. Each station comprised a 600 m^2 survey area, so we sampled 12,000 m^2 of potential bay scallop habitat at all but the Cedar Key study sites. At Cedar Key, we sampled only six stations (3,600 m^2) due to the limited extent of seagrass beds in that area.

June Survey

Pine Island Sound: Relative to previous years, scallop abundance was the lowest we have recorded in Pine Island Sound since our first survey year (1994) when we found none. We found scallops at seven of our 20 survey stations, but only one of those stations (Station 14; Figure 2) yielded more than one scallop per 600 m^2 transect. Scallops have not been abundant in Pine Island Sound since we began surveying that area, but our 2002 survey results were disappointing considering the relatively good results we recorded during 2001 (Table 1).

Anclote Estuary: Scallop abundance at the Anclote study site (Figure 3) increased substantially during our June 2002 survey relative to June 2001 (Table 2). We recorded scallops at all but one of our 20 stations, and we found over 100 scallops at both Station 16 and Station 20. Thus, the Anclote scallop population generally meets the three critieria of a healthy scallop population. Although population abundance does not average > 25 scallops per 600 m^2

transect (criterion 1) during all years, it exhibits resilience (criterion 2) because it recovers rapidly from periods of low population abundance. Also, in most years we find scallops at > 50% of the stations that we sample, thus satisfying the third criterion that scallops be distributed widely within the survey site.

Hernando: Scallop abundance continues to vary substantially at the Hernando study site (Figure 4). Mean scallop abundance declined during 2002 relative to 2001 (Table3). However, scallops at the Hernando study site were broadly distributed; we counted some scallops at every sample station. That broad-scale distribution pattern has been a feature of the Hernando scallop population during every year we have sampled with the exception of 1998 when scallops were found at only four of our 20 survey stations.

Homosassa: Scallop density recorded during June 2002 declined relative to the previous two years (Table 4). We recorded scallops at all but one of the 20 stations that we surveyed at the Homosassa study site, but we never recorded more than 122 scallops at any station. In comparison, during June 2001we recorded over 1200 scallops at a single station (Station 10; Figure 5) and at many other stations we recorded at least 200 scallops (Table 4). Nevertheless, scallops remain plentiful in Homosassa and mean density during June 2002 substantially exceeded the 25 scallops per 600 m^2 threshold established as an index of scallop population health.

Cedar Key: Scallop abundance decreased slightly in Cedar Key during June 2002 relative to June 2001 (Table 5). Abundance decreased from 26 to 5 scallops at Station 3 (Figure 6) and slight decreases also were recorded at Stations 1, 2, and 5. We encountered slightly more scallops at Station 6 during 2002 relative to 2001.

Steinhatchee: Scallop density at the Steinhatchee study site changed little between June 2001 and June 2002 (Table 6) and scallops remained abundant at many stations both north and south of the Steinhatchee River (Figure 7). We found scallops at every survey station during 2002, including Station 11 near the mouth of the Steinhatchee River where we rarely have found scallops during previous surveys. The bay scallop population in Steinhatchee nearshore waters remains the prototype for a healthy scallop population. Since we initiated our adult scallop surveys in 1994, mean density has never fallen below the 25 scallops per 600 m^2 transect, scallops can be found at most if not all survey stations, and when density decreases are detected (e.g. during 1998) a rapid recovery results. All necessary measures should be taken to ensure the continued health of the Steinhatchee scallop population.

St. Joseph Bay: The scallop population in St. Joseph Bay continues to rebound from the density nadir of 2000, when we recorded an average of < 4 scallops per sample transect. During June 2002, we recorded an average of 37.5 scallops per transect (Table 7). Scallops were relatively abundant at most stations and were rare only along the western shore of the bay between stations 15 and 19 (Figure 8). Recent patterns of scallop population abundance in St. Joseph Bay support our contention that, with proper management, an otherwise healthy scallop population will rebound from a period of low abundance.

St. Andrew Bay and Sound: During the first three years of scallop surveys in St. Andrew Bay, we recorded an average of at least five scallops per survey transect at our combined St. Andrew Bay/Sound survey stations (Table 8). During the following five years, the average scallop abundance in that system never exceeded 2.4 scallops per transect. Thus, it was somewhat surprising that we counted an average of > 7.8 scallops per transect during the June 2002 survey of the St. Andrew Bay/Sound system. We found scallops at all but two stations in St. Andrew Bay (Stations 1-13; Figure 9A) and density at three stations equaled or exceeded 25 scallops per 600 m^2. We found scallops at all but one of the seven stations that we surveyed in St. Andrew Sound (Figure 9B). At each site, both the abundance and distribution of scallops improved considerably relative to June 2001.

Pensacola Bay: In June 2002, we surveyed Pensacola Bay for the first time since 1995 and we recovered only three scallops at the twenty stations that we surveyed (Table 9; Figure 10). This area, along with all areas west of the Mexico Beach Canal (Figure 1), has been closed to bay scallop fishing since June 2002 and we will continue to monitor Pensacola Bay in an effort to determine if the closure precipitates a natural recovery.

Fall Survey

Post-season scallop surveys were conducted at the Anclote, Hernando, Homosassa, Steinhatchee, and St. Joseph Bay study sites (Tables 10-14). At the Anclote, Hernando, Homosassa, and Steinhatchee study sites, we recorded decreases in mean scallop abundance of 11%, 37%, 42%, and 78% respectively between our June and fall sampling efforts. At the St. Joseph Bay study site, we recorded a 15% increase in scallop abundance between June and fall. A similar increase in scallop abundance was recorded during 2001 and may reflect scallop migration from shallow nearshore seagrass beds into deeper water as summer progresses. Logistical constraints prevent us from

sampling in waters < 0.5 m depth, so we may have missed scallops that were residing in very shallow seagrass beds during the June survey.

RECRUITMENT

We estimate recruitment of new individuals to the scallop population using spat collectors. These devices consist of a plastic mesh panel encased within an onion bag that is tied to a polypropylene rope. The rope is anchored to the sediment with a cinder block and is supported in the water column with a crab trap float (Arnold et al., 1998). A single trap is deployed at each station and allowed to soak for six weeks prior to retrieval. An additional collector is deployed, at the same station, three weeks later and similarly allowed to soak for six weeks. This overlapping deployment/recovery schedule ensures that any recruitment event that occurs just prior to recovery of one series of collectors can be detected on the subsequent, overlapping collector. Upon recovery, collectors are returned to the laboratory for visual examination and enumeration of all recruits.

At the Anclote study site, we recorded a relatively high rate of recruitment of juvenile bay scallops to our collectors during winter 2002, continuing a trend that was first detected during late fall of 2001 (Arnold et al., 2002). We recorded some level of recruitment at all of our Anclote sampling stations (Figure 11), but recruitment was highest at the southernmost stations. Recruitment was considerably lower at Anclote during fall 2002 especially relative to fall 2001. Whereas we recorded recruitment pulses that exceeded five scallops per collector per day at many Anclote stations during January 2002, we detected no pulses exceeding five scallops per collector per day during the remainder of 2002. Recruitment does not necessarily translate directly into adult abundance, but it will be interesting to compare adult abundance between June 2002 (following a period of relatively high recruitment) and June 2003 (following a period of relatively low recruitment).

The pattern of recruitment that we recorded at our Hernando study site reiterated that observed at the Anclote study site. Rates of recruitment were high at all Hernando monitoring stations during fall 2001 (Arnold et al., 2002) and during winter 2002 (Figure 12). Again, by the end of January 2002 recruitment had subsided and we observed very low levels of recruitment during the remainder of 2002.

Recruitment to our artificial collectors was low at all of our Homosassa monitoring stations during fall 2001 (Arnold et al., 2002) and throughout 2002 (Figure 13). This perceived recruitment failure is difficult to explain,

especially considering that adult scallop density at the Homosassa study site substantially exceeded that recorded at either the Anclote or Hernando study sites. Clearly, juveniles are recruiting into the Homosassa population as evidenced by the relatively high adult abundance recorded during June 2002, but our collectors are not effectively sampling those recruits. It is possible that scallops are recruiting to areas where we have not deployed collectors and then migrating into our study area prior to June. Particularly in the Homosassa area, we deploy our collectors in relatively shallow water to avoid conflict with shrimp fishermen whose trawling activities result in the loss of any collectors in their path. However, those deeper water areas also support fewer and less dense seagrass beds, and scallops generally require a seagrass substrate for successful settlement. Alternatively, shallow-water habitats in the Homosassa area support dense seagrass meadows, and those meadows provide an ideal settlement substrate that the larval scallops may choose in preference to our artificial collectors (Ambrose et al., 1992). This does not explain why, in areas of similar dense seagrass meadows in the Anclote area, rates of recruitment are not similarly compromised. It is possible that the larval pulses that our recruit collectors are sampling at Anclote and Hernando do not occur at Homosassa, but that still does not explain where the abundant population of adult scallops that we have recorded at Homosassa since 1999 is coming from.

We also recorded relatively high levels of recruitment to spat collectors deployed in St. Joseph Bay during fall 2001 (Arnold et al., 2002) and during winter and spring 2002 (Figure 14). We cannot determine if there is a relationship between the larval pool recruiting to the Anclote-Hernando area and the larval pool recruiting to the St. Joseph Bay area, but it is possible within the constraints of oceanographic processes on the west Florida shelf. A coastal jet, characterized as a unidirectional flow between Anclote and Cape San Blas (Yang and Weisberg, 1999), appears capable of transporting larvae between the two areas within the approximately two-week life span of larval scallops.

FISHING EFFORT SURVEY

Beginning in 1985, the State of Florida closed all state waters to scallop harvest during April, May, and June of each year. This policy essentially established a season opening date for scallop harvest of July 1 each year. Despite the many changes to scallop harvesting laws that have been implemented since 1985, that season opening date remains in effect. However, during various workshops, meetings, and other interactions with the public, there

have been suggestions and requests that the season opening be delayed until no earlier than the middle of July. During summer 2002, we collected a variety of data in an effort to evaluate the validity of the July 1 season opening date from a biological perspective. This section provides results of our efforts to evaluate fishing pressure and short-term changes in scallop population density at the Homosassa and Steinhatchee study sites. The following section provides results from a study comparing descriptive parameters of adductor muscle and shell, the two body components upon which scallop harvesting limits are established.

Overflights were conducted on various randomly selected weekdays and weekends during July through September (Table 16). All fixed-wing flight dates were randomly selected, with the exception of the September 9 flight date which was chosen to correspond to the last weekend of the harvest season. Helicopter flights were conducted on July 6 and August 2, were piloted by Lieutenant Pat Crippen of the FWC Law Enforcement Division, and were flights of opportunity. During each flight, a single observer counted all boats that displayed a diver-down flag or exhibited other clear evidence (e.g., snorkelers in the water) that the vessel was supporting scallop harvesting activities.

We counted scallop fishing activity in the Steinhatchee and Homosassa regions on five weekday days and five weekend days. On three of the weekdays (Monday, July 8; Tuesday, July 16; Thursday, August 8) effort was very low at both sites (Figure 19). On the remaining two weekdays (Friday, August 2 and Monday, September 9) effort was relatively high and resembled the activity level typical of weekends. Weekend activity generally approached, and sometimes exceeded, 500 boats per site. We estimated that, on average, four people were associated with each boat. Thus, we estimate that on the busiest weekends of the scallop season, at least 2000 people were harvesting scallops at each of the two study sites each day. This is a conservative estimate because we counted only a snapshot of the people actually fishing on a particular day. We counted all boats that were on the scallop grounds at a particular time, but boats were coming and going throughout the day so the actual total is higher. From Figure 18, we can estimate that each harvester could collect a maximum of approximately 100 scallops, so on each harvest date we conservatively estimate that 200,000 scallops were harvested from each of the Homosassa and Steinhatchee populations. Considering that there were ten weekends in the scallop season during 2002, and that harvest occurred on two days each weekend, we estimate that 4 million scallops were harvested by the recreational

fishery at each of the Homosassa and Steinhatchee study sites on the Saturdays and Sundays that occurred during the 2002 season. It is reasonable to consider that the Fourth of July (a Thursday) and Labor Day (a Monday) supported effort levels similar to (if not greater than) a weekend day, adding another 400,000 harvested scallops to the seasonal total at each site. A lesser, but additional, number of scallops were collected during the remaining 48 weekdays (including Fridays) of the season. Although we did record differences in the level of effort between sites on certain days (e.g. Saturday, August 24), we recorded little overall difference in effort between Homosassa and Steinhatchee (Figure 19).

As noted previously in the section on Adult Abundance, we recorded similar decreases in scallop abudance between our June and fall surveys at both the Homosassa (37%) and Steinhatchee (42%) study sites. In comparison, the decrease in scallop abundance was only 11% at the Anclote study site during the same time period. However, it would be presumptuous to assume that fishing mortality accounted for the approximate 30% difference in loss of scallops between the unfished Anclote site and the fished Homosassa and Steinhatchee sites. Our population surveys produce highly variable data because we are limited in the number of stations that we can survey at each site and because scallop distribution is very patchy. Additionally, when we evaluate pre-season vs. post-season abundance estimates at all sites and for all years for which we have data, the percentage of scallops remaining after the season closes is actually higher at sites where harvest is allowed relative to sites where harvest is not allowed (Figure 20). Again, many factors confound this result and it should not be construed that allowing scallop harvest actually increases population abundance. For example, the closed areas that we monitor (Anclote, Hernando, Homosassa) occur at a lower latitude than do the open areas (Steinhatchee, St. Joseph Bay). The low latitude sites experience warmer water temperatures and potentially greater physiological stress than the high latitude sites. Additionally, the closed areas support (by definition) relatively low-density scallop populations. Those low-density populations may inhabit locations that are not well-suited for scallop survival.

BODY COMPONENT INDICES

Beginning in late April 2002, we obtained samples of bay scallops collected from various sites throughout peninsular and panhandle Florida. Collection dates, and the number of scallops collected from each site on each date, varied from site to site and are presented in Table 15. Note that scallops were collected from Pensacola Bay on

two dates in July, but during the storage process the collection date for each sample was lost and it is not possible to determine when each of the two July collections was made. However, this confusion has little impact on the interpretation of results because the results for the two samples collected from Pensacola Bay in July are almost identical.

The basic growth patterns of shell and adductor muscle appear similar from site to site throughout the summer. During our earliest collections, the average shell height at all sites was approximately 50 mm and we detected no significant difference in shell height among sites (Figure 15). In general, shell height increased at a slow but steady pace during May through July (Figure 16), but from August through October we measured very little additional shell growth. Shell height at all sites averaged approximately 53 mm during July, increased to approximately 58 mm during August, but increased only slightly (to approximately 60 mm) by October (Figure 15).

Until August, meat weight followed a growth pattern very similar to that observed for shell height. Adductor muscle growth was slow but steady, and essentially paralleled the pattern of shell height growth, from May through July (Figure 16). At all but the St. Marks site, adductor muscle dry weight peaked during August and then began to decline (Figure 17). That decline can be attributed to the reallocation of energy resources from the adductor muscle to the gonad in preparation for spawning (Barber and Blake, 1981). In St. Marks, we measured maximum adductor muscle dry weight during September but cannot say if that was the annual maximum because we have no subsequent samples.

Because the daily bag limits for recreational bay scallop harvest are defined as volumetric equivalents of either shell or adductor muscle, we also measured shell volume and meat volume in relation to those limits. Each harvester is allowed to possess no more than two gallons (7.6 l) of whole scallops or 1 pint (0.47 l) of shucked meats. By determining the volume of shell or adductor muscle collected from each site on each date, we were able to derive an estimate of the number of scallops that could be collected by an individual harvester at each site on each date (Figure 18). In every case, the harvester can legally collect more scallops by shucking on the water than can be legally harvested by leaving the adductor muscle in the shell. Sometimes, this difference is substantial. For example, at Steinhatchee during July, an individual harvester may legally collect approximately 125 scallops in the shell, but if the scallops are shucked prior to determining the catch then the harvester may legally collect > 175

scallops. During August, when meat weight peaks in all populations, the disparity is not so great although it is always possible to collect more scallops by shucking "on the water". In September, a substantial difference reemerges, and in Lanark during September it is possible to collect almost three times as many scallops by shucking as by landing shellstock.

A substantial disparity in bag limit also occurs among study sites. If a shucking protocol is followed, harvest of > 175 scallops is allowed in Steinhatchee during July whereas only < 125 scallops can be harvested in Homosassa during that same month. If landing shellstock, approximately 150 scallops can be landed in St. Joseph Bay during July but only about 50 scallops would be allowed in Lanark during that same month. Even during August, there is a substantial difference between the number of scallops that can be legally harvested from Lanark relative to the other study sites.

REFERENCES

Ambrose, W.G., Jr., C.H. Peterson, H.C. Summerson and J. Lin (1992). Experimental tests of factors affecting recruitment of bay scallops (*Argopecten irradians*) to spat collectors. Aquaculture 108: 67-86.

Arnold, W.D., S.P. Geiger, L. Gentile, M.M. Harrison, C.A. Meyer, M.L. Parker and S.C. Peters (2002). Annual report of the bay scallop project, 2001. Report to the Division of Marine Fisheries, Florida Fish and Wildlife Conservation Commission, 58 pp.

Arnold, W.S., D.C. Marelli, C.P. Bray and M.M. Harrison (1998). Recruitment of bay scallops *Argopecten irradians* in Floridan Gulf of Mexico waters: scales of coherence. Mar. Ecol. Prog. Ser. 170: 143-157.

Arnold, W.S., D.C. Marelli, K.G. Hagner, M.M. Harrison, P.L. Hoffman, M. Humphrey, M.L. Parker and M.W. White (1999). Annual report of the bay scallop project, 1998. Report to the Florida Marine Fisheries Commission, 71 pp.

Barber, B.J. and N.J. Blake (1981). Energy storage and utilization in relation to gametogenesis in *Argopecten irradians concentricus* (Say). J. Exp. Mar. Biol. Ecol. 52: 121-134.

Yang, H. and R.H. Weisberg (1999). Response of the west Florida shelf circulation to climatological wind stress forcing. J. Geophys. Res. 104: 5301-5320.

Table 1. Adult bay scallop density at each of 20 stations sampled at the Pine Island Sound, Florida, study site during each June from 1994 through 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1994	1995	1996	1997	1998	1999	2000	2001	2002
1	0	0	0	0	0	0	8	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	2	0	0
4	0	0	0	0	0	0	22	25	0
5	0	0	0	0	0	0	1	0	1
6	0	0	1	0	0	0	0	0	1
7	0	0	1	1	0	0	1	0	1
8	0	0	0	0	2	1	0	0	0
9	0	0	0	0	0	0	2	0	0
10	0	1	0	3	1	0	0	0	1
11	0	1	0	0	0	0	1	1	0
12	0	34	1	5	5	1	0	22	1
13	0	9	0	4	0	0	0	37	0
14	0	0	0	15	0	0	0	2	7
15	0	1	0	5	0	0	0	1	1
16	0	1	0	2	0	1	2	7	0
17	0	0	9	9	22	12	8	12	0
18	0	0	3	0	14	25	1	3	0
19	0	1	0	2	0	7	0	0	0
20	0	1	0	0	3	5	8	0	0
MEAN	0.00	2.45	0.75	2.30	2.35	2.60	2.80	5.50	0.65
S.D.	0.00	7.69	2.07	3.87	5.66	6.12	5.31	10.47	1.57

Table 2. Adult bay scallop density at each of 20 stations sampled at the Anclote, Florida, study site during each June from 1994 through 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1994	1995	1996	1997	1998	1999	2000	2001	2002
1	1	0	4	43	0	0	1	0	6
2	72	0	3	49	0	1	171	8	49
3	15	0	2	307	0	8	177	8	20
4	0	0	0	1	0	1	1	0	22
5	106	0	0	20	0	0	7	14	26
6	3	0	0	4	0	0	6	2	61
7	21	0	0	1	0	1	3	26	25
8	14	0	12	136	0	2	8	0	14
9	2	3	0	4	0	0	0	12	8
10	1	0	1	30	0	0	2	0	64
11	1	0	2	27	0	0	3	0	0
12	14	0	0	1	0	0	0	0	2
13	12	0	0	8	0	0	0	1	4
14	0	0	11	14	1	4	12	12	9
15	1	0	1	141	17	13	4	0	10
16	5	0	23	87	46	9	4	7	280
17	9	0	6	20	313	8	27	24	16
18	1	0	3	42	17	0	7	3	9
19	1	0	0	8	12	2	9	1	4
20	14	0	0	4	0	1	2	0	115
MEAN	14.65	0.15	3.40	47.35	20.30	2.50	22.2	5.90	37.20
S.D.	26.80	0.67	5.82	74.05	69.80	3.85	52.28	8.05	63.74

Table 3. Adult bay scallop density at each of 20 stations sampled at the Hernando, Florida, study site during each June from 1997 through 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1997	1998	1999	2000	2001	2002
1	3	0	0	13	13	2
2	11	0	33	76	110	5
3	134	3	17	213	555	12
4	80	6	43	48	105	1
5	9	0	1	29	61	17
6	1	0	2	31	2	10
7	0	0	0	10	0	9
8	0	0	0	14	2	5
9	1	0	1	66	6	6
10	3	0	1	43	6	3
11	0	0	5	17	5	4
12	0	0	1	61	2	5
13	10	0	4	18	7	6
14	1	0	0	15	6	9
15	10	1	2	54	14	6
16	2	1	1	7	5	9
17	8	0	3	27	7	5
18	6	0	0	28	10	9
19	6	0	0	25	5	8
20	0	0	0	49	1	13
MEAN	14.25	0.55	5.70	42.2	46.10	7.20
S.D.	33.13	1.47	11.79	44.94	124.21	3.91

Table 4. Adult bay scallop density at each of 20 stations sampled at the Homosassa, Florida, study site during each June from 1993 through 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
1	4	3	0	0	9	0	3	23	74	16
2	13	38	9	2	17	0	3	87	209	51
3	4	5	9	5	18	2	7	29	185	31
4	9	1	4	0	19	0	36	323	735	113
5	5	0	14	5	15	0	33	395	489	78
6	4	0	1	9	7	0	70	724	121	68
7	4	1	2	5	5	34	47	817	174	79
8	8	5	27	4	27	3	13	850	663	69
9	3	3	7	4	13	13	54	614	391	82
10	3	19	3	2	58	6	9	165	1237	63
11	10	0	1	0	5	1	2	23	39	7
12	0	0	1	3	0	0	0	12	5	0
13	8	23	6	2	12	0	13	231	380	63
14	4	15	0	9	23	2	48	352	339	13
15	24	4	1	2	7	0	3	45	173	45
16	13	3	3	1	6	0	5	28	197	21
17	20	3	1	6	0	0	13	25	133	109
18	8	9	3	3	55	0	212	88	431	122
19	2	5	2	1	8	0	2	25	11	4
20	0	0	0	0	0	0	0	1	0	2
MEAN	7.30	6.85	4.70	3.15	15.20	3.05	28.65	242.85	299.3	51.80
S.D.	6.28	9.82	6.43	2.74	16.01	7.92	48.10	290.00	305.38	38.91

Table 5. Adult bay scallop density at each of six stations sampled at the Cedar Key, Florida, study site during each June from 1998 through 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1998	1999	2000	2001	2002
1	0	1	1	5	0
2	0	0	0	8	2
3	1	4	0	26	5
4	0	4	0	1	1
5	1	0	1	5	0
6	3	7	0	1	6
MEAN	0.83	2.67	0.33	7.67	2.33
S.D.	1.17	2.80	0.52	9.37	2.58

Table 6. Adult bay scallop density at each of 20 stations sampled at the Steinhatchee, Florida, study site during each June from 1994 through 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1994	1995	1996	1997	1998	1999	2000	2001	2002
1	189	13	528	1	9	43	946	19	61
2	284	48	36	5	100	97	17	41	61
3	89	16	128	103	90	97	24	70	139
4	338	14	269	13	18	34	196	93	24
5	650	14	1879	25	16	105	99	430	90
6	234	22	210	37	0	137	75	48	204
7	81	4	73	3	4	29	115	47	170
8	0	1	0	3	0	2	5	8	1
9	169	44	498	23	39	158	84	57	563
10	10	0	76	1	3	10	0	33	62
11	1	0	0	0	0	0	0	0	12
12	281	0	415	30	0	638	1603	804	185
13	10	8	41	6	0	46	124	214	152
14	259	4	119	7	7	129	9	7	18
15	120	1	65	6	0	52	8	21	69
16	1	30	71	30	20	545	49	48	22
17	13	23	118	42	35	789	208	150	142
18	133	3	44	14	3	19	313	44	370
19	121	313	284	135	111	332	278	101	182
20	85	27	151	34	91	27	213	220	247
MEAN	153.40	29.25	250.25	25.90	27.30	164.45	218.30	122.75	138.70
S.D.	159.05	68.31	414.65	34.95	38.17	227.34	388.54	190.03	136.93

Table 7. Adult bay scallop density at each of 20 stations sampled at the St. Joseph Bay, Florida, study site during each June from 1994 through 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1994	1995	1996	1997	1998	1999	2000	2001	2002
1	16	1	4	2	0	1	0	0	11
2	2	1	64	10	0	35	9	0	48
3	12	6	2	3	0	10	22	0	26
4	1	2	0	0	12	11	18	0	42
5	8	67	2	2	0	29	5	0	32
6	15	205	114	19	3	43	3	0	4
7	5	114	55	7	4	30	0	0	79
8	265	348	140	93	90	105	4	41	243
9	61	118	43	11	7	29	0	4	7
10	7	711	363	111	18	53	3	3	86
11	0	5	759	10	25	31	1	1	3
12	5	233	1143	40	26	13	1	167	46
13	3	195	369	62	45	9	0	4	59
14	19	270	820	10	2	4	0	10	30
15	5	11	44	1	9	22	0	0	0
16	9	14	228	14	10	5	0	0	1
17	2	44	282	2	7	7	0	1	0
18	1	25	240	0	4	7	1	0	0
19	2	17	179	7	5	14	0	1	3
20	279	257	103	142	2	164	10	10	30
MEAN	35.85	132.20	247.70	27.30	13.45	31.10	3.85	12.10	37.50
S.D.	81.87	175.47	312.22	41.53	21.31	48.25	6.30	37.62	55.22

Table 8. Adult bay scallop density at each of 20 stations sampled at the St. Andrew Bay/Sound, Florida, study site during each June from 1994 through 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1994	1995	1996	1997	1998	1999	2000	2001	2002
1	1	4	12	1	1	0	0	0	1
2	5	13	6	5	0	0	2	0	0
3	70	16	155	9	0	1	2	0	2
4	244	8	23	0	0	1	1	0	1
5	50	1	20	2	2	0	0	0	12
6	96	20	13	0	0	1	0	0	5
7	144	6	2	0	2	4	0	0	7
8	173	13	11	0	31	3	1	0	7
9	149	8	39	1	0	0	1	1	7
10	68	0	26	1	0	5	1	0	36
11	69	5	5	0	1	9	12	0	38
12	6	2	6	4	0	1	1	0	0
13	6	2	56	8	1	2	2	0	25
14	24	2	2	0	0	0	0	0	1
15	0	9	7	0	0	8	0	0	1
16	0	1	0	0	0	0	0	0	6
17	2	0	0	0	0	0	0	0	3
18	5	3	1	0	1	0	0	0	4
19	24	1	13	3	0	8	1	0	0
20	0	1	5	3	4	4	0	0	1
MEAN	56.80	5.75	20.10	1.85	2.15	2.35	1.20	0.05	7.85
S.D.	70.77	5.82	34.78	2.74	6.87	3.01	2.65	0.22	11.51

Table 9. Adult bay scallop density at each of 20 stations sampled at the Pensacola, Florida, study site during June 1995 and June 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1995	2002
1	0	0
2	0	1
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	1
11	0	0
12	0	0
13	0	0
14	0	0
15	0	1
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
MEAN	0.00	0.15
S.D.	0.00	0.37

Table 10. Adult bay scallop density at each of 20 stations sampled at the Anclote, Florida, study site during fall 1994, 1997, 1998, 2000, 2001, and 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1994	1997	1998	2000	2001	2002
1	3	33	0	6	0	9
2	36	4	0	7	8	5
3	22	292	0	12	2	0
4	0	1	0	0	0	6
5	44	22	0	1	1	2
6	0	3	0	1	0	22
7	13	29	0	3	0	45
8	0	88	0	3	0	26
9	0	0	0	0	1	158
10	2	42	0	1	0	19
11	2	41	0	0	0	1
12	0	4	0	0	0	1
13	0	7	0	0	2	2
14	1	9	1	0	1	0
15	9	182	1	0	0	42
16	0	607	23	1	2	272
17	3	47	12	3	8	1
18	5	40	2	0	1	1
19	0	0	1	5	1	0
20	3	5	0	1	1	53
MEAN	7.15	72.80	2.00	2.20	1.40	33.25
S.D.	12.58	144.81	5.62	3.16	2.37	66.93

Table 11. Adult bay scallop density at each of 20 stations sampled at the Hernando, Florida, study site during fall, 2001 and fall, 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	2001	2002
1	2	8
2	6	8
3	6	10
4	4	1
5	2	2
6	2	3
7	2	1
8	3	2
9	10	2
10	2	1
11	1	0
12	3	0
13	0	3
14	0	0
15	4	6
16	6	3
17	4	9
18	14	15
19	11	6
20	0	11
MEAN	4.10	4.55
S.D.	3.81	4.32

Table 12. Adult bay scallop density at each of 20 stations sampled at the Homosassa, Florida, study site during fall from 1995 through 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1995	1996	1997	1998	1999	2000	2001	2002
1	0	0	0	0	2	5	0	8
2	0	0	9	0	1	39	36	7
3	0	6	8	3	6	40	115	36
4	0	0	50	0	12	542	598	86
5	0	1	38	0	5	412	211	84
6	2	1	9	5	29	654	73	50
7	0	0	4	8	58	570	62	41
8	0	1	28	1	4	399	299	19
9	1	0	13	4	24	111	43	71
10	4	1	35	0	2	5	115	46
11	0	0	2	0	0	4	0	2
12	0	3	1	0	0	2	2	2
13	0	0	9	0	0	3	0	15
14	0	1	29	0	24	57	46	31
15	3	1	1	0	2	5	13	38
16	0	1	21	0	1	14	4	3
17	0	4	4	0	1	4	0	3
18	0	7	43	0	53	12	0	57
19	0	0	11	0	0	16	2	1
20	0	0	1	0	0	0	0	0
MEAN	0.50	1.35	15.80	1.05	11.20	144.70	80.95	30.00
S.D.	1.15	2.06	15.77	2.21	17.61	226.64	145.38	28.53

Table 13. Adult bay scallop density at each of 20 stations sampled at the Steinhatchee, Florida, study site during fall 1994, 1995, 1996, 1997, 1998, 2000, 2001, and 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1994	1995	1996	1997	1998	2000	2001	2002
1	1	6	439	4	5	1066	9	7
2	48	105	60	87	7	7	21	94
3	100	25	65	79	13	13	7	89
4	61	18	139	5	18	190	50	6
5	45	25	767	5	9	147	288	21
6	25	12	48	27	0	31	45	5
7	61	3	183	9	0	216	57	157
8	0	0	0	6	0	3	0	5
9	0	11	3	130	0	218	87	66
10	0	6	29	0	0	0	1	9
11	0	0	0	1	0	0	1	13
12	1	30	62	1	0	57	4	13
13	0	7	31	6	0	20	10	7
14	0	25	39	0	2	13	6	7
15	0	1	46	17	0	43	24	3
16	0	58	69	136	1	75	12	1
17	0	47	33	148	3	131	11	1
18	26	0	35	70	5	352	34	23
19	18	112	176	163	10	143	21	0
20	77	5	197	42	10	169	95	78
MEAN	23.15	24.80	121.05	46.80	4.50	144.70	39.15	30.25
S.D.	31.3	32.74	183.11	57.02	5.29	237.54	64.82	43.03

Table 14. Adult bay scallop density at each of 20 stations sampled at the St. Joseph Bay, Florida, study site during fall from 1994 through 2002. Scallop density at each station is reported per 600 m^2 transect.

STATION	1994	1995	1996	1997	1998	1999	2000	2001	2002
1	0	1	0	0	0	0	3	0	0
2	0	0	1	0	0	0	10	0	0
3	0	1	94	24	0	0	0	0	0
4	0	0	86	0	1	0	0	0	0
5	0	1	30	0	7	0	1	0	2
6	0	0	51	32	6	0	7	3	67
7	1	1	8	18	1	0	2	3	60
8	7	150	11	70	25	3	3	89	2
9	5	2	1	25	0	9	0	13	2
10	11	21	28	35	0	2	0	8	4
11	0	3	190	2	26	0	0	6	181
12	0	37	1534	59	16	0	2	126	232
13	0	55	1324	61	42	0	6	20	164
14	1	37	439	44	13	0	1	89	91
15	0	0	0	5	0	0	0	0	2
16	0	0	12	6	3	0	2	5	11
17	1	16	137	4	3	0	3	0	9
18	0	4	238	4	2	0	1	3	15
19	0	31	187	4	1	0	0	9	21
20	0	10	171	0	3	1	0	7	0
MEAN	1.30	18.50	227.10	19.65	7.45	0.75	2.05	19.05	43.15
S.D.	2.94	34.95	426.98	23.17	11.47	2.10	2.74	36.50	70.15

Table 15. Locations, dates and (in parentheses) sample size for collection of scallop samples for analysis of shell and body component indices Note that two samples collected from Pensacola during July 2002 cannot be differentiated as to date of collection.

Anclote	Homosassa	Steinhatchee	St. Marks	Lanark	St. Joseph Bay	Pensacola
4/24 (28)	4/24 (30)	5/17 (29)	6/25 (33)	5/16 (30)	5/17 (5)	6/12 (31)
5/8 (19)	5/8 (34)	6/20 (30)	7/15 (30)	6/5 (30)	5/26 (18)	6/26 (31)
5/30 (30)	5/30 (30)	7/10 (30)	8/5 (30)	7/9 (30)	5/31 (10)	7/? (30)
7/1 (29)	6/21 (23)	7/17 (30)	8/27 (33)	7/31 (30)	6/12 (30)	7/? (34)
7/16 (30)	7/16 (30)	7/31 (30)	9/20 (30)	8/22 (30)	7/17 (32)	
8/9 (33)	8/12 (30)	8/13 (30)		9/12 (30)	8/15 (30)	
8/29 (30)	8/29 (30)	9/3 (30)			9/19 (30)	
9/17 (30)	9/17 (30)					
10/8 (32)	10/10 (30)					

Table 16. Date, day of the week, and mode of transport for the conduct of aerial surveys of bay scallop recreational fishing effort during summer 2002 at Homosassa and Steinhatchee, Florida.

Date	July 6	July 8	July 16	July 20	August 2	August 4	August 8	August 24	August 31	September 9
Day of Week	Saturday	Monday	Tuesday	Saturday	Friday	Sunday	Thursday	Saturday	Saturday	Monday
Type of Aircraft	Helicopter	Airplane	Airplane	Airplane	Helicopter	Airplane	Airplane	Airplane	Airplane	Airplane

Figure 1. Map of Florida, showing sample sites and other locations referenced in the text, and the location of the open and closed scallop harvesting areas.

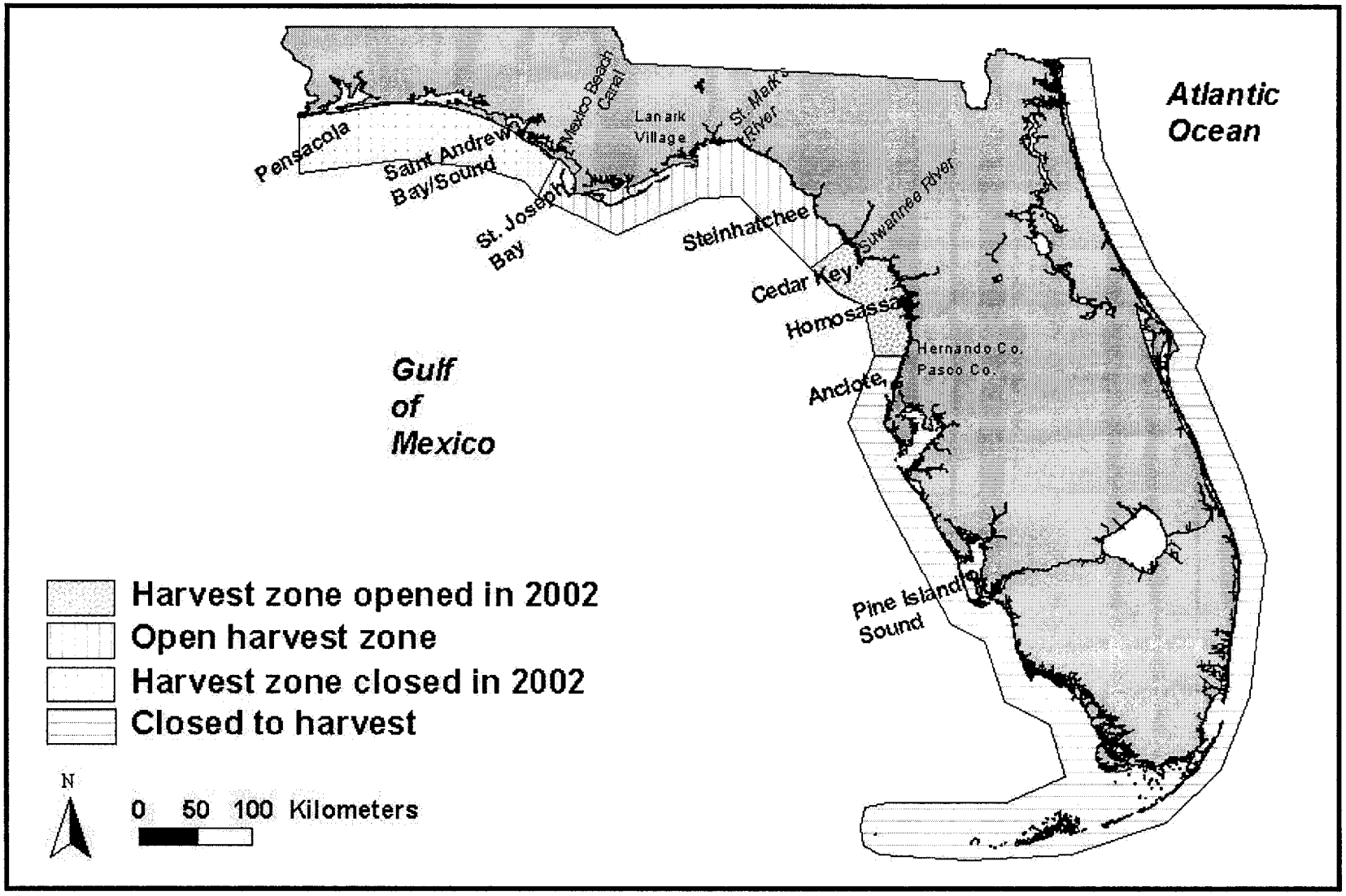

Atlantic Ocean
Gulf of Mexico
Pensacola
Saint Andrew Bay/Sound
St. Joseph Bay
Mexico Beach Canal
Lanark Village
St. Mark's River
Steinhatchee
Suwannee River
Cedar Key
Homosassa
Hernando Co.
Pasco Co.
Anclote
Pine Island Sound
Harvest zone opened in 2002
Open harvest zone
Harvest zone closed in 2002
Closed to harvest
N
0 50 100 Kilometers

Figure 2. Station locations for sampling adult abundance of bay scallops (*Argopecten irradians*) at the Pine Island Sound, Florida, study site.

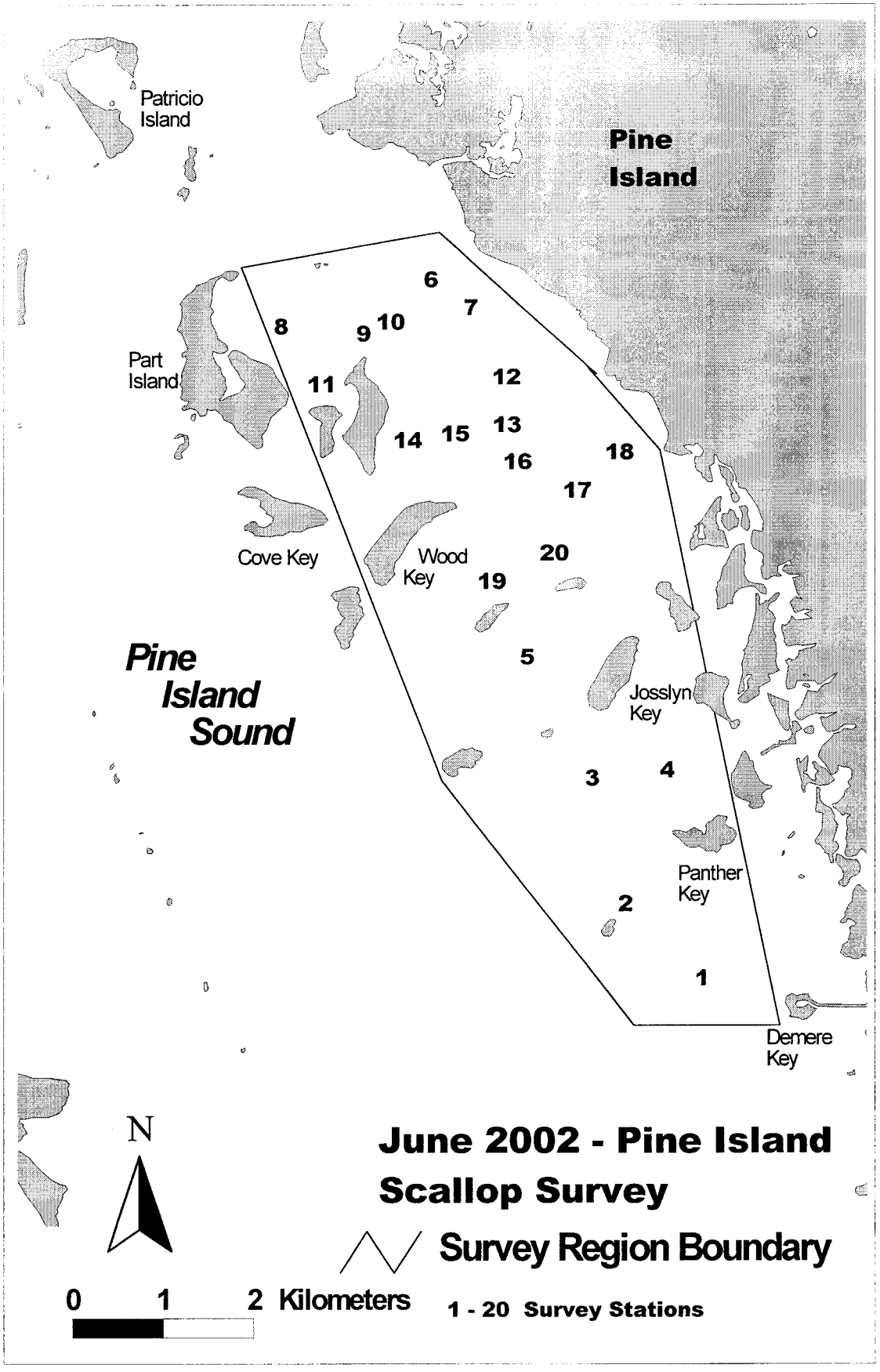

Patricio Island
Pine Island
Part Island
Cove Key
Wood Key
Josslyn Key
Panther Key
Demere Key
Pine Island Sound
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
N
0 1 2 Kilometers
June 2002 - Pine Island Scallop Survey
Survey Region Boundary
1 - 20 Survey Stations

Figure 3. Station locations for sampling juvenile recruitment (small italicized numbers) and adult abundance (large bold numbers) of bay scallops (*Argopecten irradians*) at the Anclote, Florida, study site.

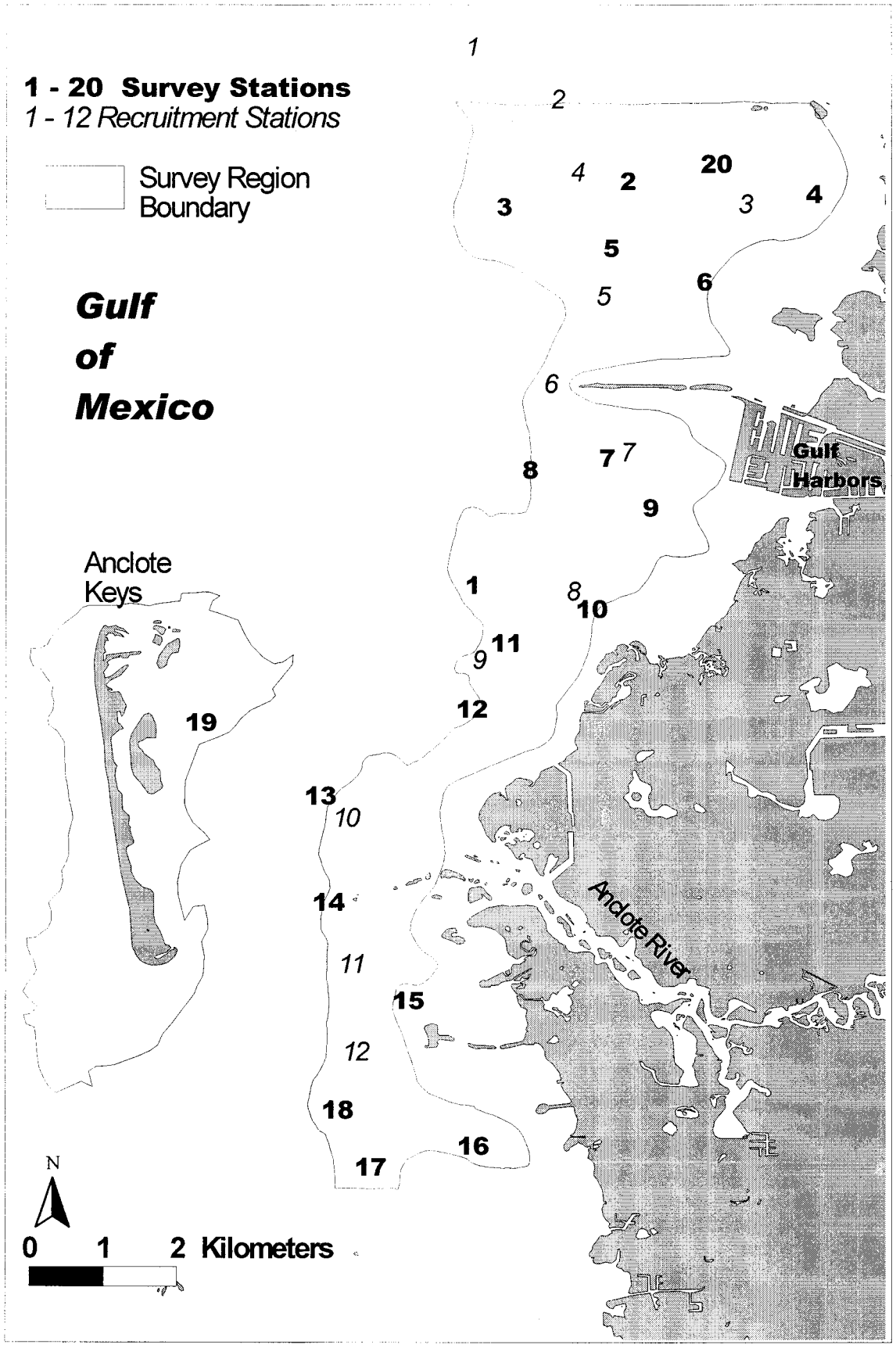

1 - 20 Survey Stations
1 - 12 Recruitment Stations
Survey Region Boundary
Gulf of Mexico
Anclote Keys
Gulf Harbors
Anclote River
N
0 1 2 Kilometers

Figure 4. Station locations for sampling juvenile recruitment (small italicized numbers) and adult abundance (large bold numbers) of bay scallops (*Argopecten irradians*) at the Hernando, Florida, study site.

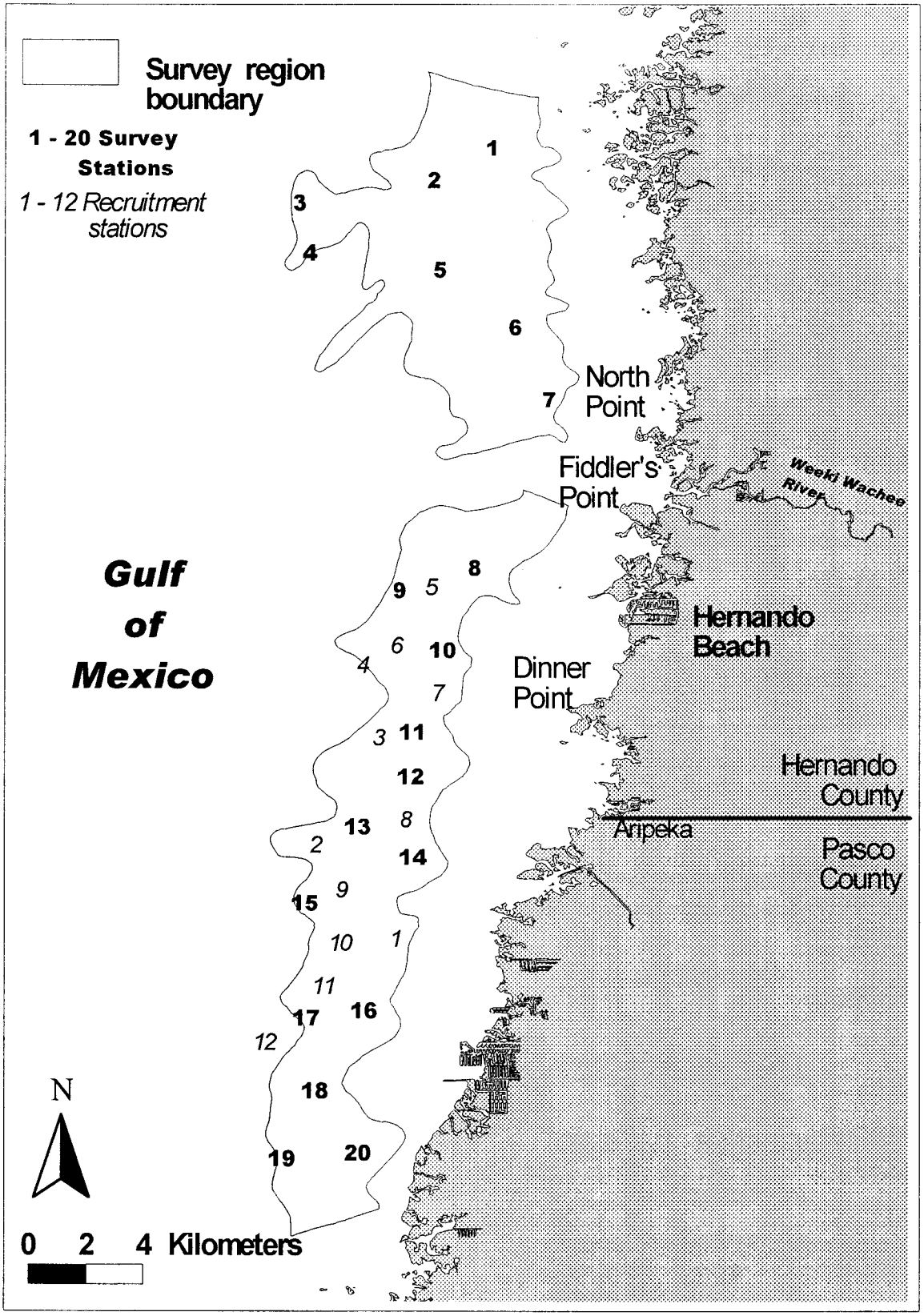

Survey region boundary
1 - 20 Survey Stations
1 - 12 Recruitment stations
Gulf of Mexico
North Point
Fiddler's Point
Weeki Wachee River
Hernando Beach
Dinner Point
Hernando County
Aripeka
Pasco County
N
0 2 4 Kilometers

Figure 5. Station locations for sampling juvenile recruitment (small italicized numbers) and adult abundance (large bold numbers) of bay scallops (*Argopecten irradians*) at the Homosassa, Florida, study site. Note that recruitment stations 11 and 12 were relocated in an effort to reduce losses.

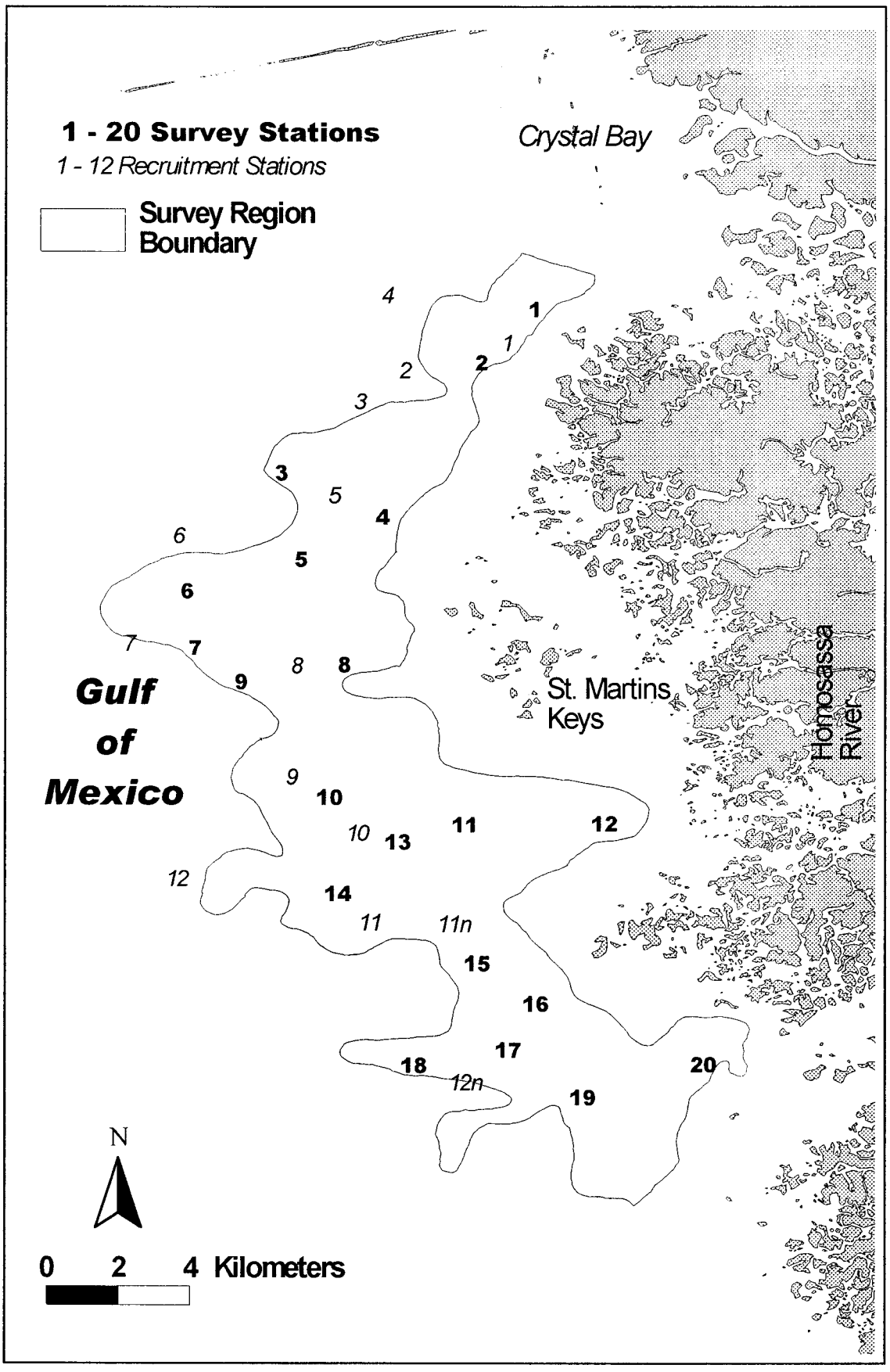

1 - 20 Survey Stations
1 - 12 Recruitment Stations
Survey Region Boundary
Crystal Bay
Gulf of Mexico
St. Martins Keys
Homosassa River
N
0 2 4 Kilometers

Figure 6. Station locations for sampling adult abundance of bay scallops (*Argopecten irradians*) at the Cedar Key, Florida, study site.

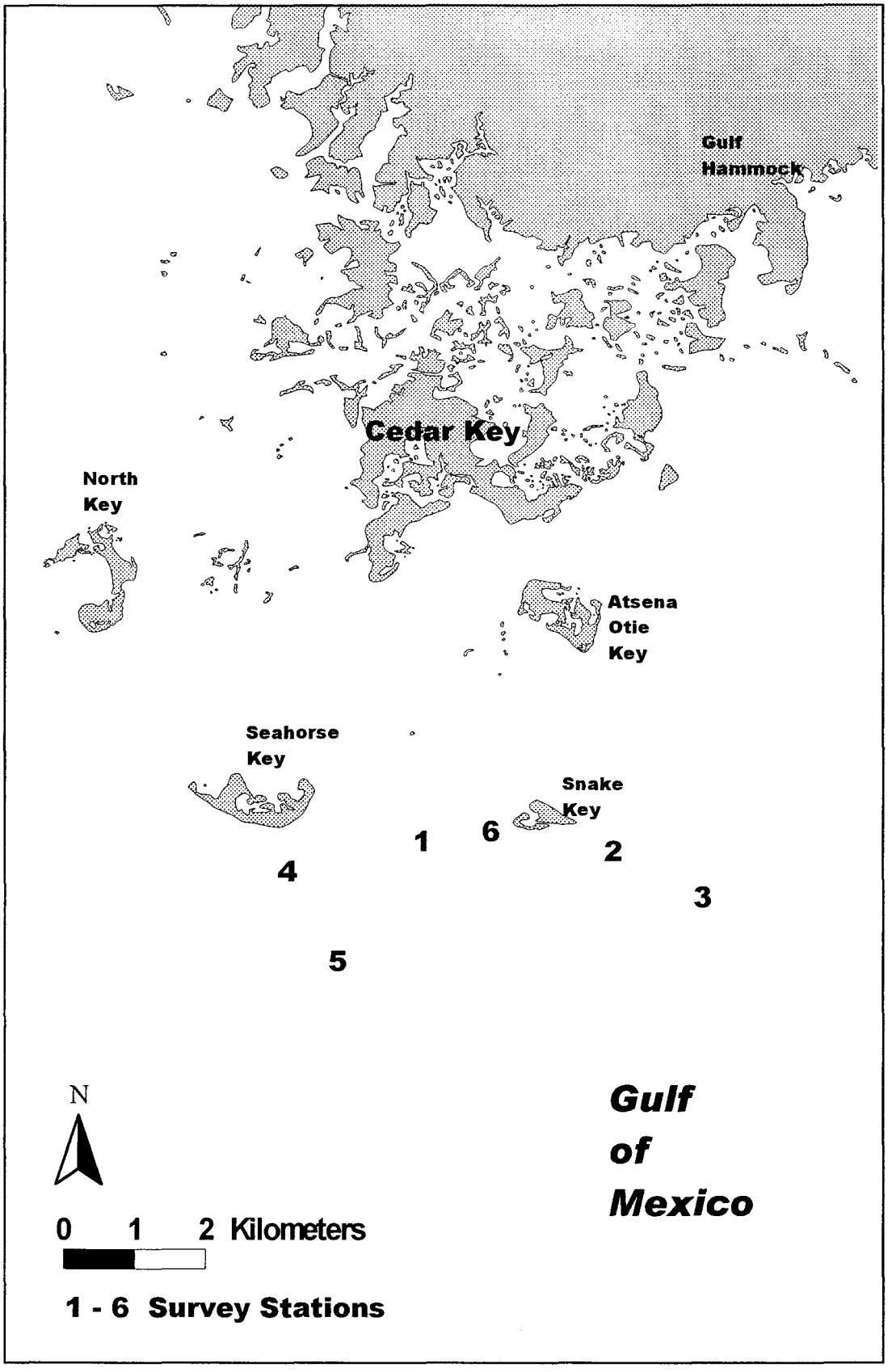

Gulf
Hammock
Cedar Key
North
Key
Atsena
Otie
Key
Seahorse
Key
Snake
Key
1
6
2
4
3
5
N
Gulf
of
Mexico
0 1 2 Kilometers
1 - 6 Survey Stations

Figure 7. Station locations for sampling adult abundance of bay scallops (*Argopecten irradians*) at the Steinhatchee, Florida, study site.

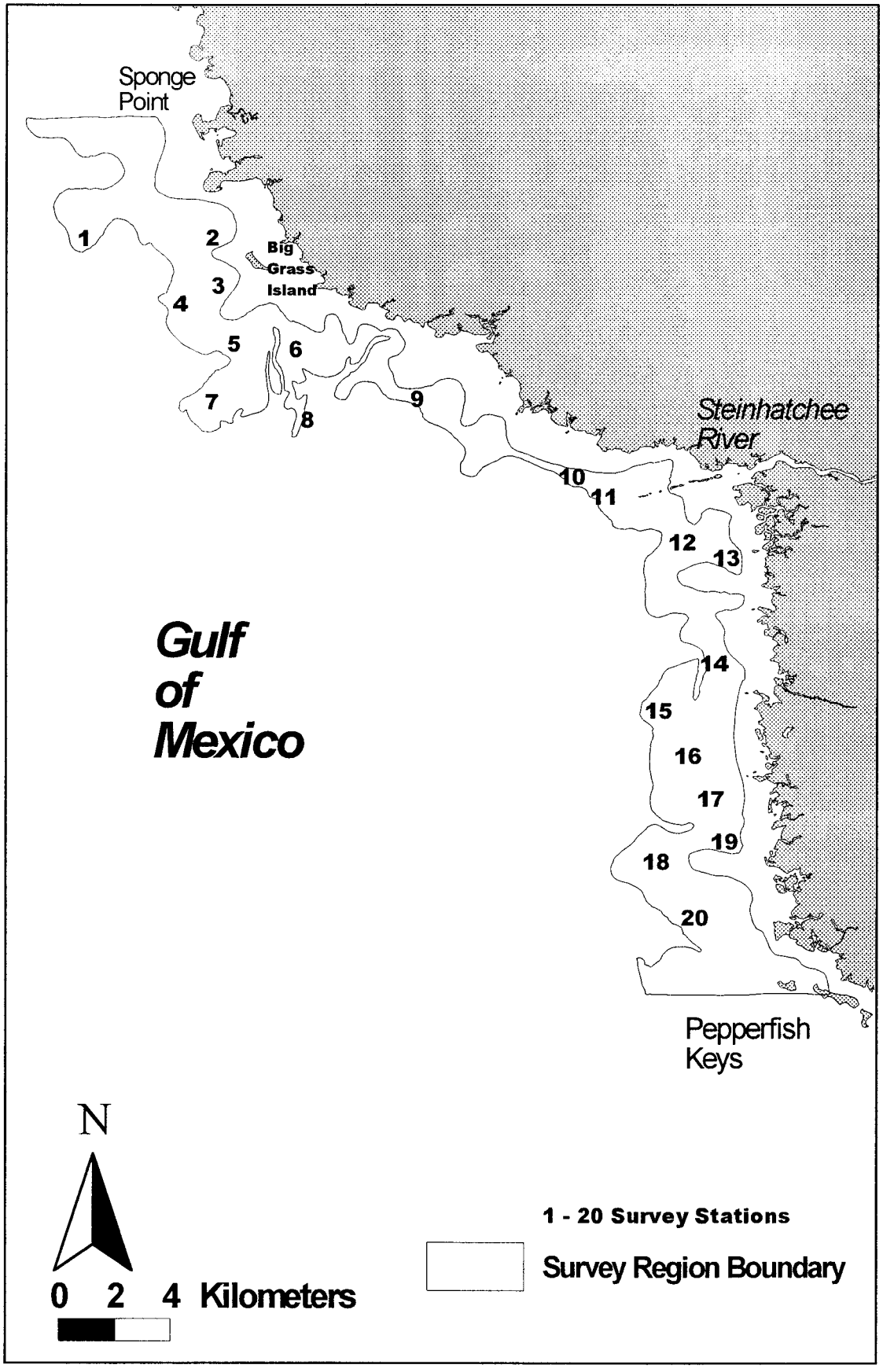

Sponge Point
Big Grass Island
Steinhatchee River
Gulf of Mexico
Pepperfish Keys
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
N
0 2 4 Kilometers
1 - 20 Survey Stations
Survey Region Boundary

Figure 8. Station locations for sampling juvenile recruitment (small italicized numbers) and adult abundance (large bold numbers) of bay scallops (*Argopecten irradians*) at the St. Joseph Bay, Florida, study site.

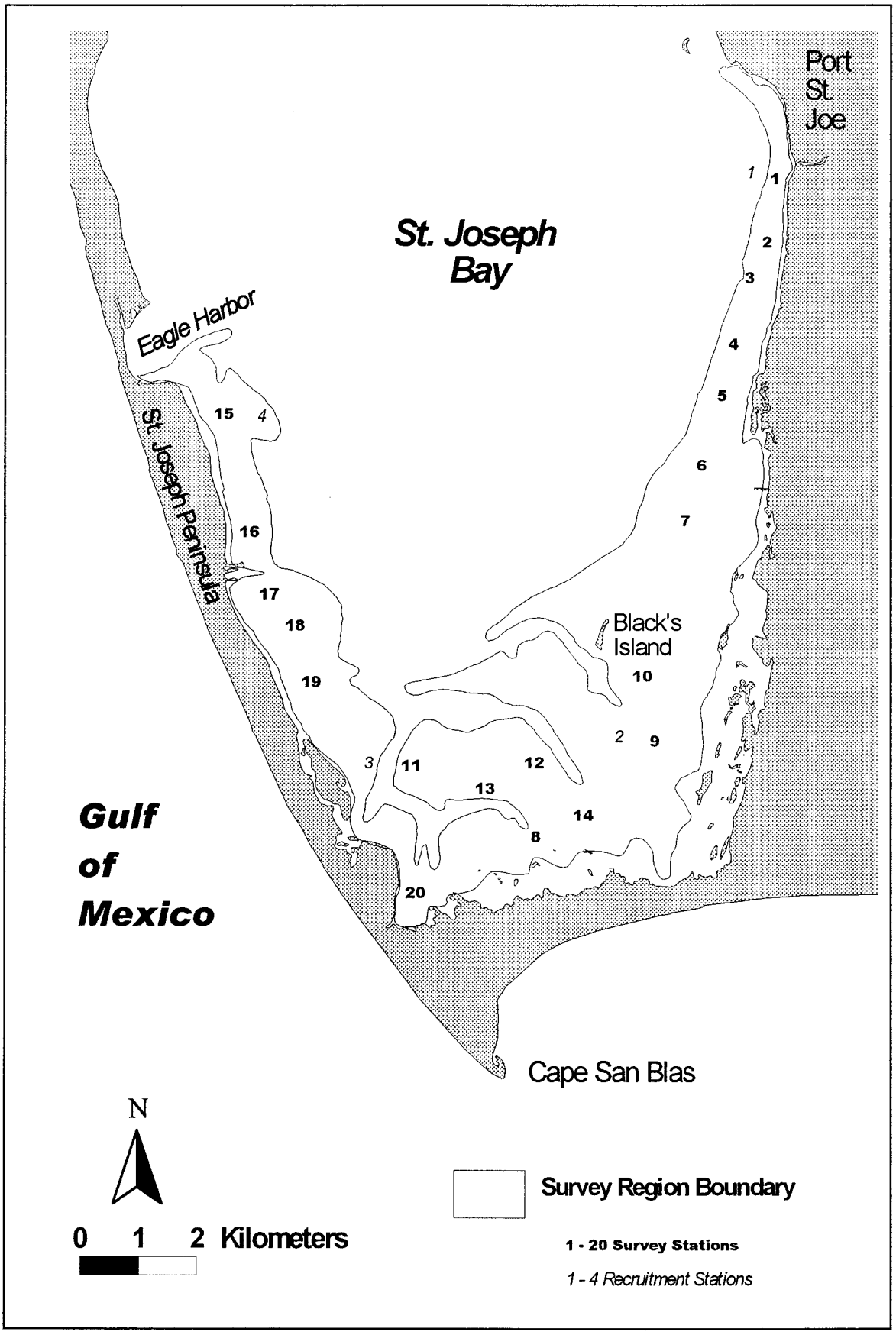
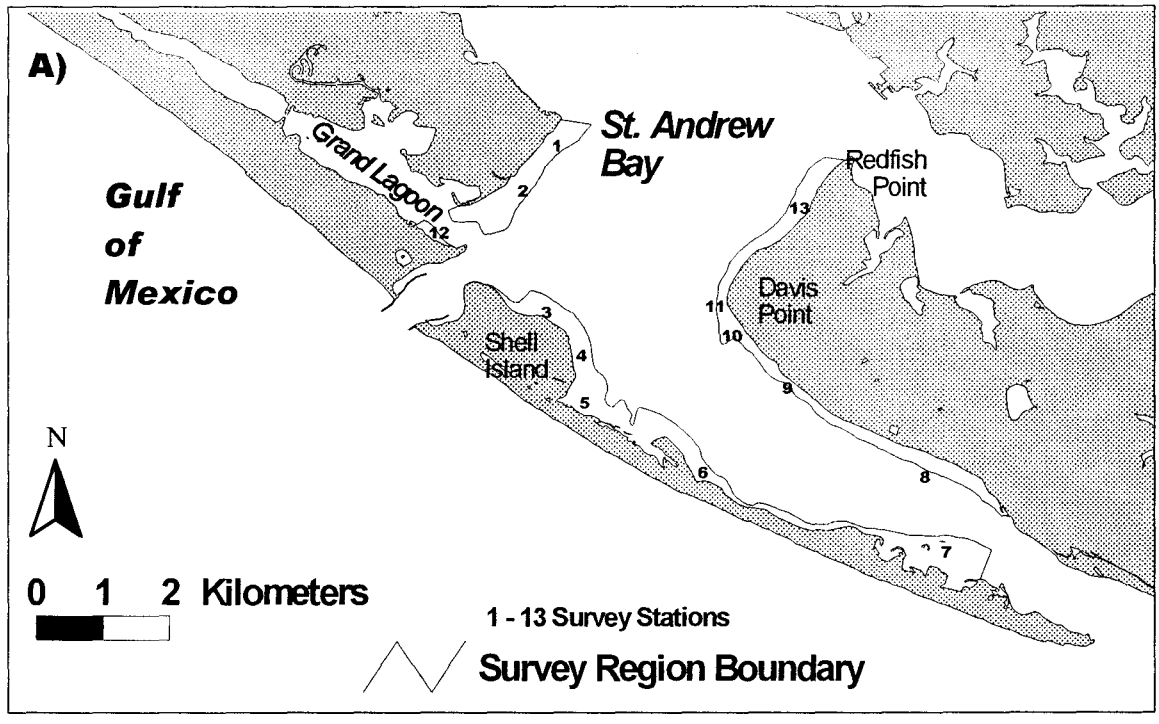

Port St. Joe
St. Joseph Bay
Eagle Harbor
St. Joseph Peninsula
Black's Island
Gulf of Mexico
Cape San Blas
N
0 1 2 Kilometers
Survey Region Boundary
1 - 20 Survey Stations
1 - 4 Recruitment Stations

Figure 9. Station locations for sampling adult abundance of bay scallops (*Argopecten irradians*) at (A) the St. Andrew Bay and (B) the St. Andrew Sound, Florida, study sites.


A)
Gulf
of
Mexico
Grand Lagoon
St. Andrew
Bay
Redfish
Point
Davis
Point
Shell
Island
1
2
3
4
5
6
7
8
9
10
11
12
13
N
0 1 2 Kilometers
1 - 13 Survey Stations
Survey Region Boundary

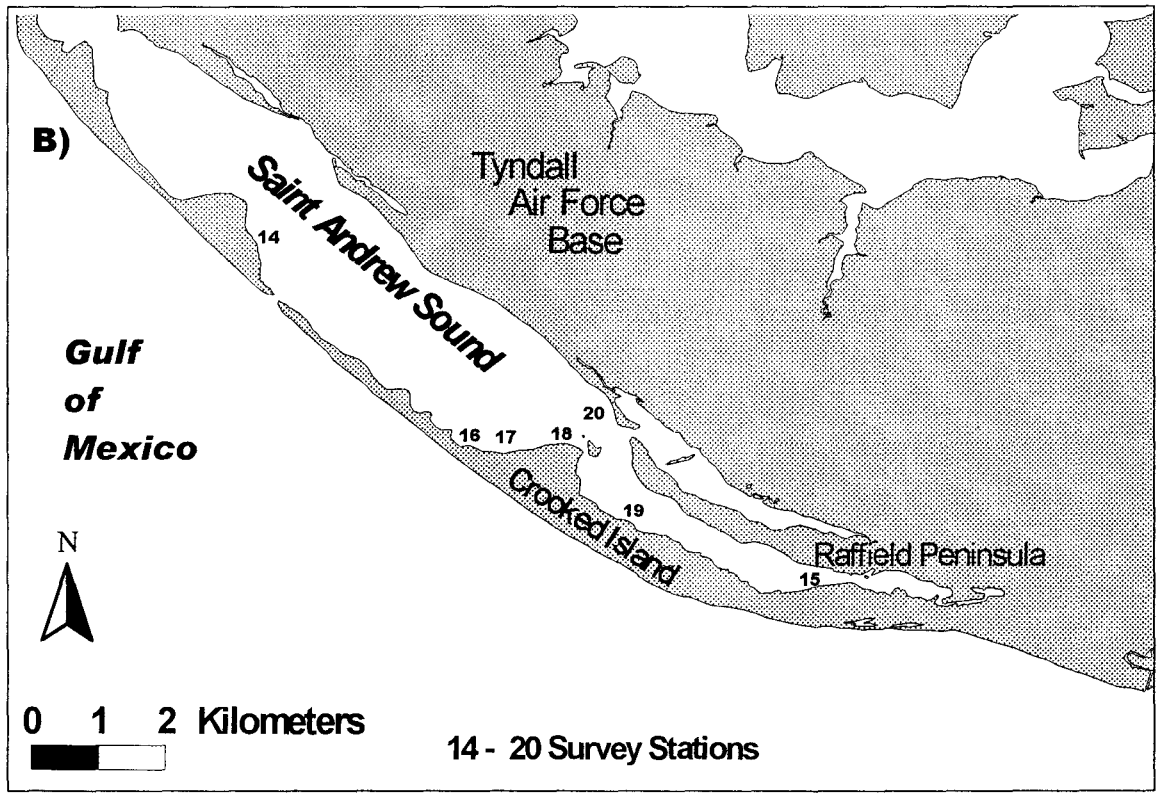

B)
Saint Andrew Sound
Tyndall
Air Force
Base
Gulf
of
Mexico
Crooked Island
Raffield Peninsula
14
15
16
17
18
19
20
N
0 1 2 Kilometers
14 - 20 Survey Stations

Figure 10. Station locations for sampling adult abundance of bay scallops (*Argopecten irradians*) at the Pensacola Bay, Florida, study site.

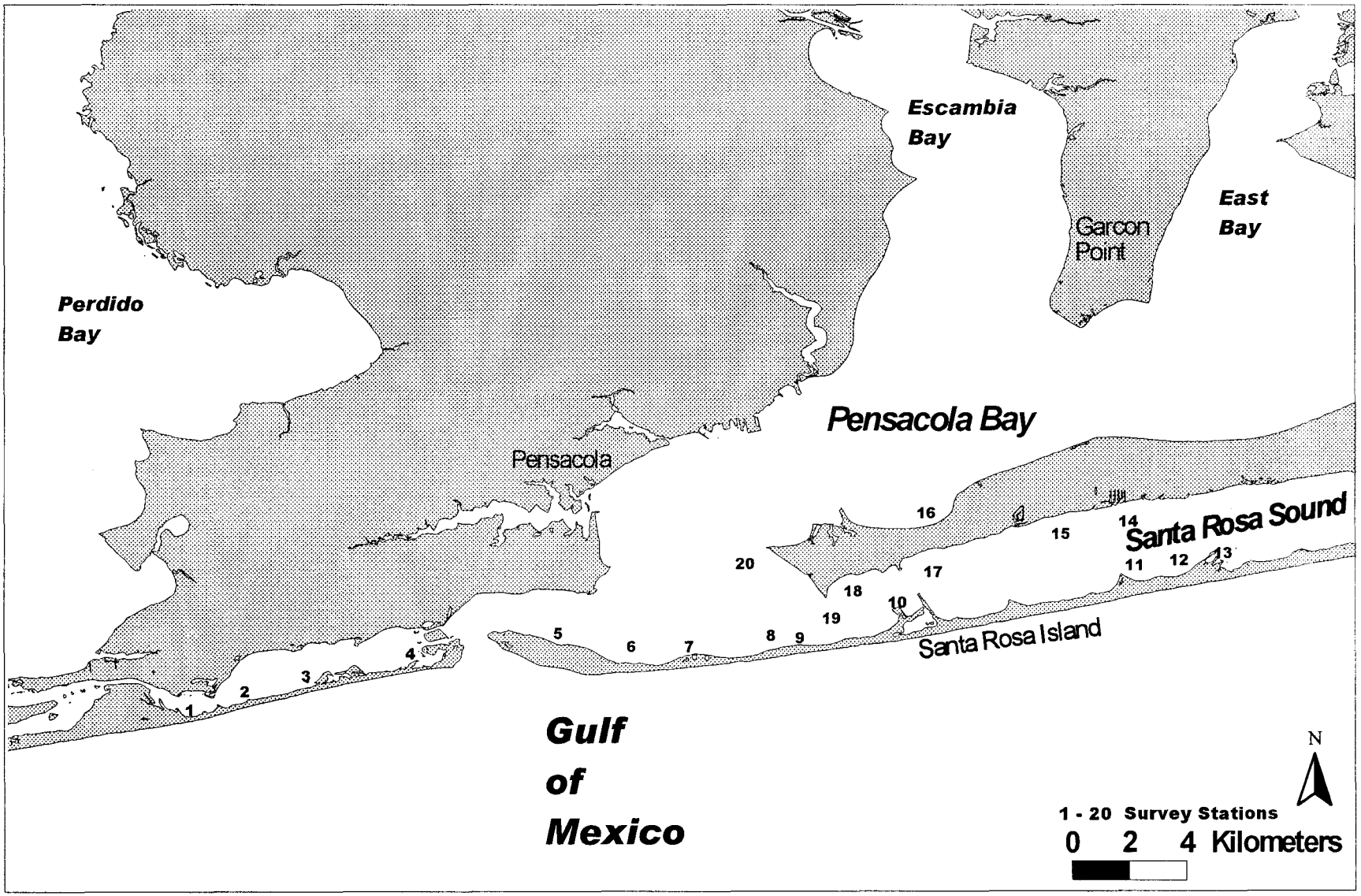

Escambia
Bay
East
Bay
Garcon
Point
Perdido
Bay
Pensacola Bay
Pensacola
Santa Rosa Sound
Santa Rosa Island
Gulf
of
Mexico
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
N
1 - 20 Survey Stations
0 2 4 Kilometers

Figure 11. Average daily recruitment of juvenile scallops to spat collectors located at various locations within the Anclote study site. Stations run from north to south with station 1 most northerly and station 12 most southerly. See Figure 3 for specific station locations. * = lost trap.

Anclote Region Recruitment - 2002

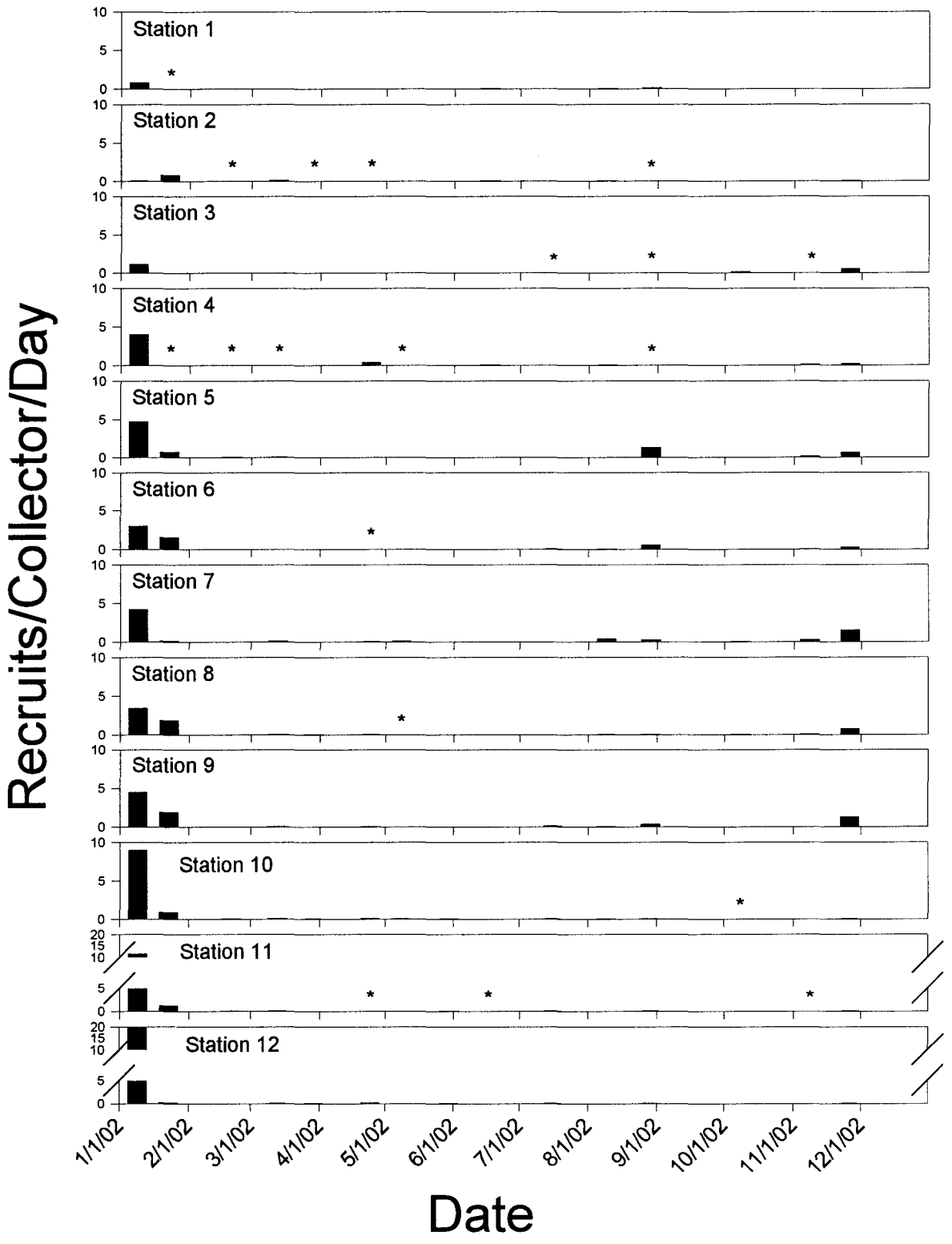


Figure 12. Average daily recruitment of juvenile scallops to spat collectors located at various locations within the Hernando study site. Stations run from north to south with station 1 most northerly and station 12 most southerly. See Figure 5 for specific station locations. * = lost trap.

Hernando Region Recruitment - 2002

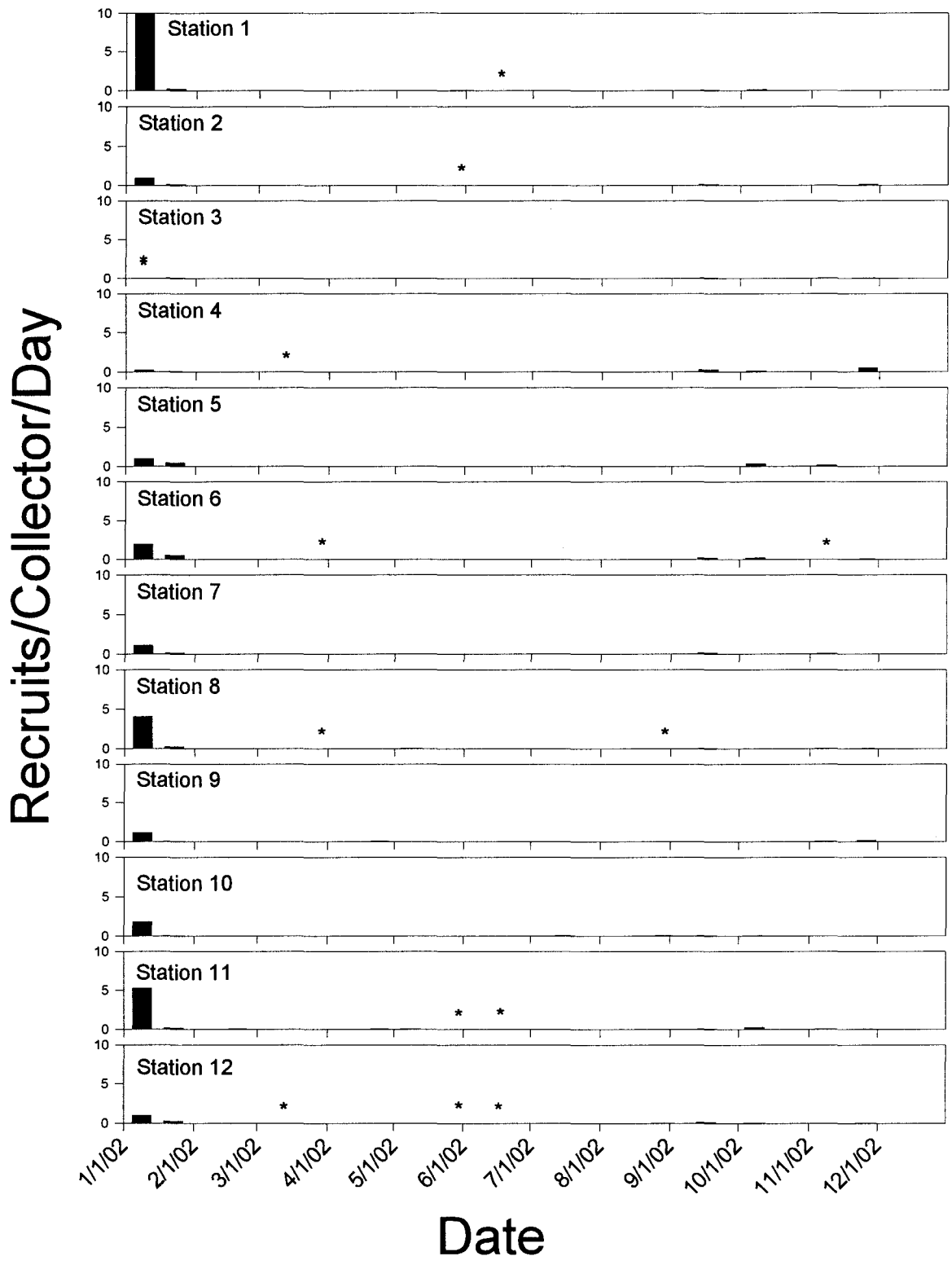


Figure 13. Average daily recruitment of juvenile scallops to spat collectors located at various locations within the Homosassa study site. Stations run from north to south with station 1 most northerly and station 12 most southerly. See Figure 7 for specific station locations. * = lost trap.

Homosassa Region Recruitment - 2002

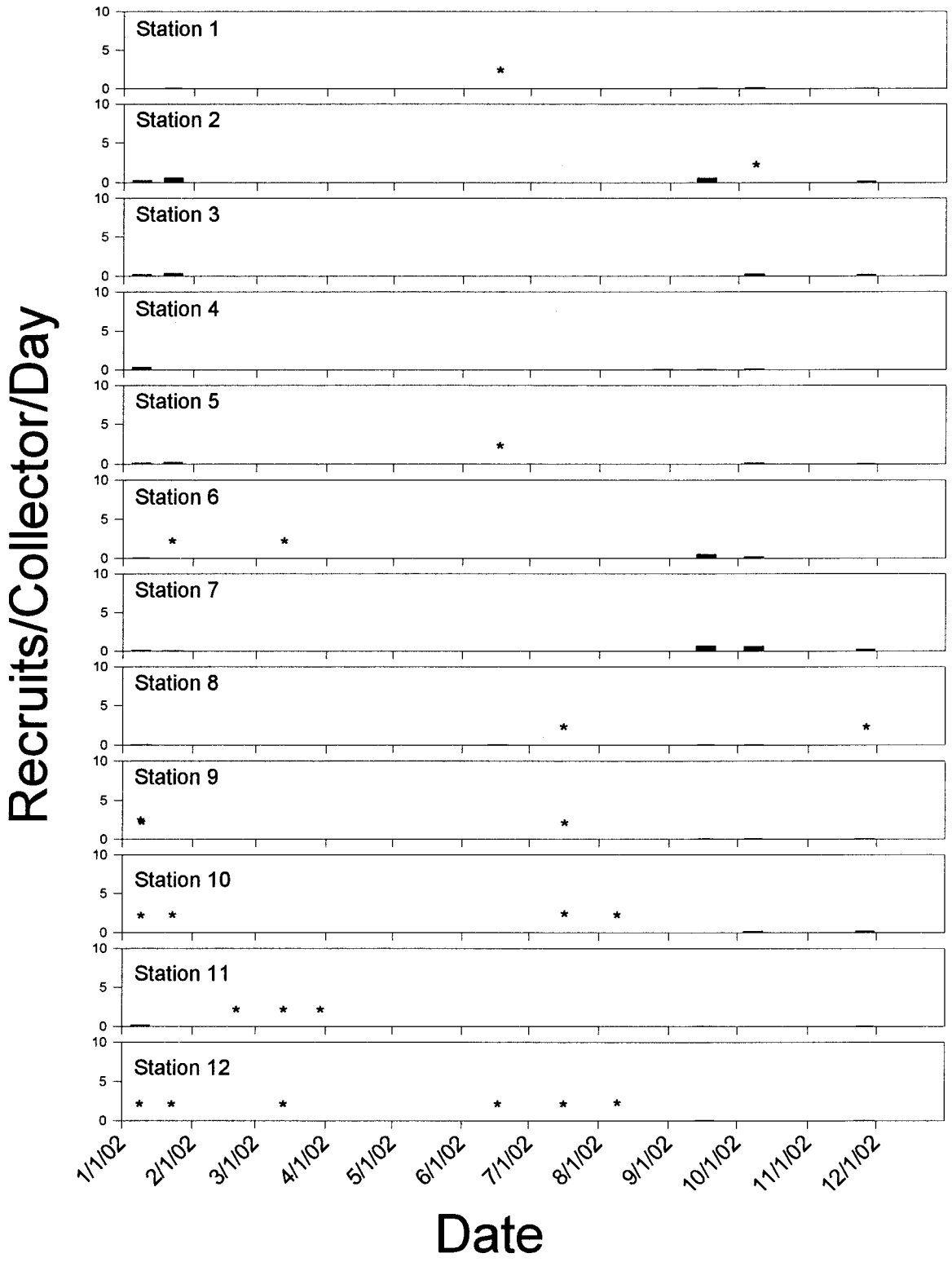


Figure 14. Average daily recruitment of juvenile scallops to spat collectors located at various locations within the St. Joseph Bay study site. See Figure 10 for specific station locations. * = lost trap. Empty boxes in June and August indicate no deployments.

St. Joe Bay Recruitment - 2002

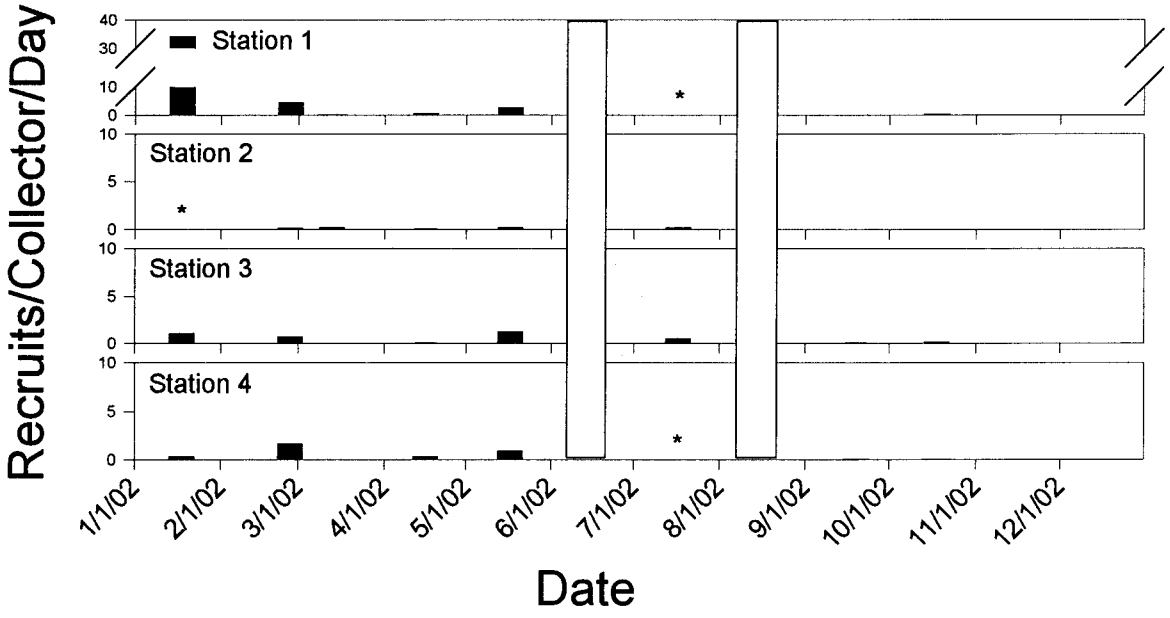


Figure 15. Mean shell height (error bars represent one standard deviation) of adult bay scallops collected from various sites during May through October, 2002. See text and Figure 1 for information on collection sites.

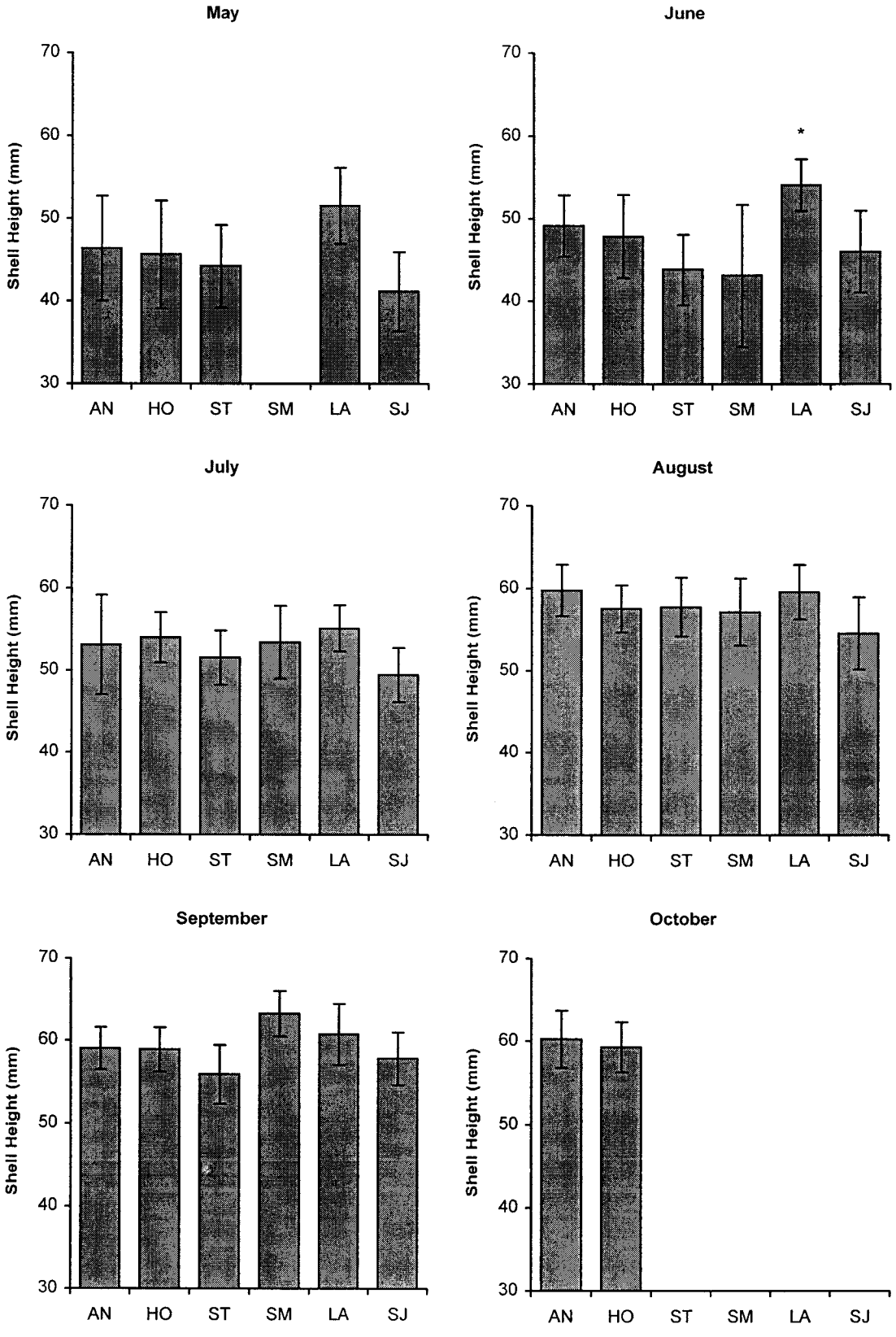

May
June
July
August
September
October
Shell Height (mm)
70
60
50
40
30
AN
HO
ST
SM
LA
SJ
*

Figure 16. Changes in shell height and adductor muscle dry weight of adult bay scallops collected from various locations during April through October, 2002. Error bars represent one standard deviation. See text and Figure 1 for information on collection sites.

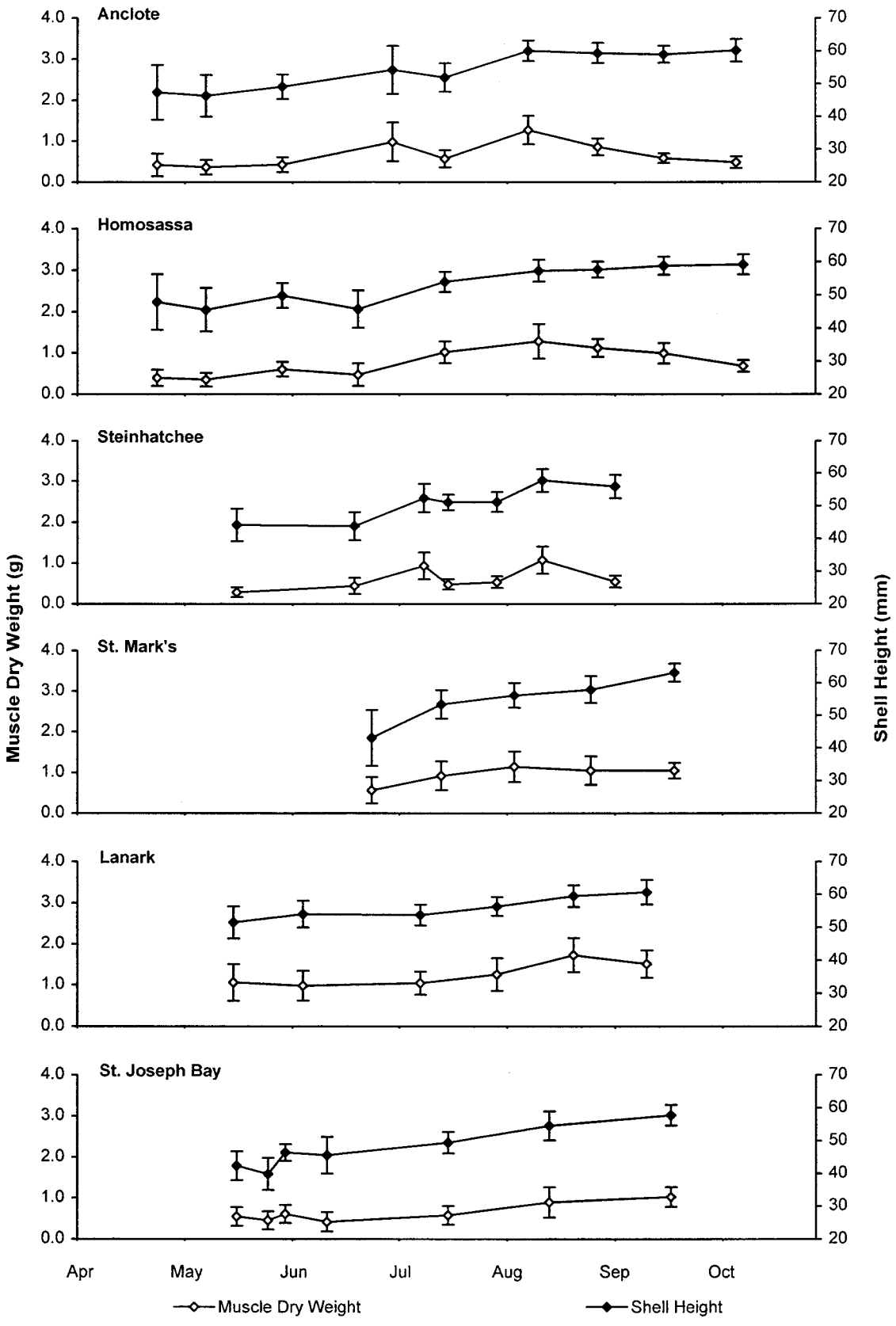

Anclote
Homosassa
Steinhatchee
St. Mark's
Lanark
St. Joseph Bay
Muscle Dry Weight (g)
Shell Height (mm)
4.0
3.0
2.0
1.0
0.0
70
60
50
40
30
20
Apr
May
Jun
Jul
Aug
Sep
Oct
Muscle Dry Weight
Shell Height

Figure 17. Mean muscle dry weight (error bars represent one standard deviation) of adult bay scallops collected from various sites during April through October, 2002. See text and Figure 1 for information on collection sites.

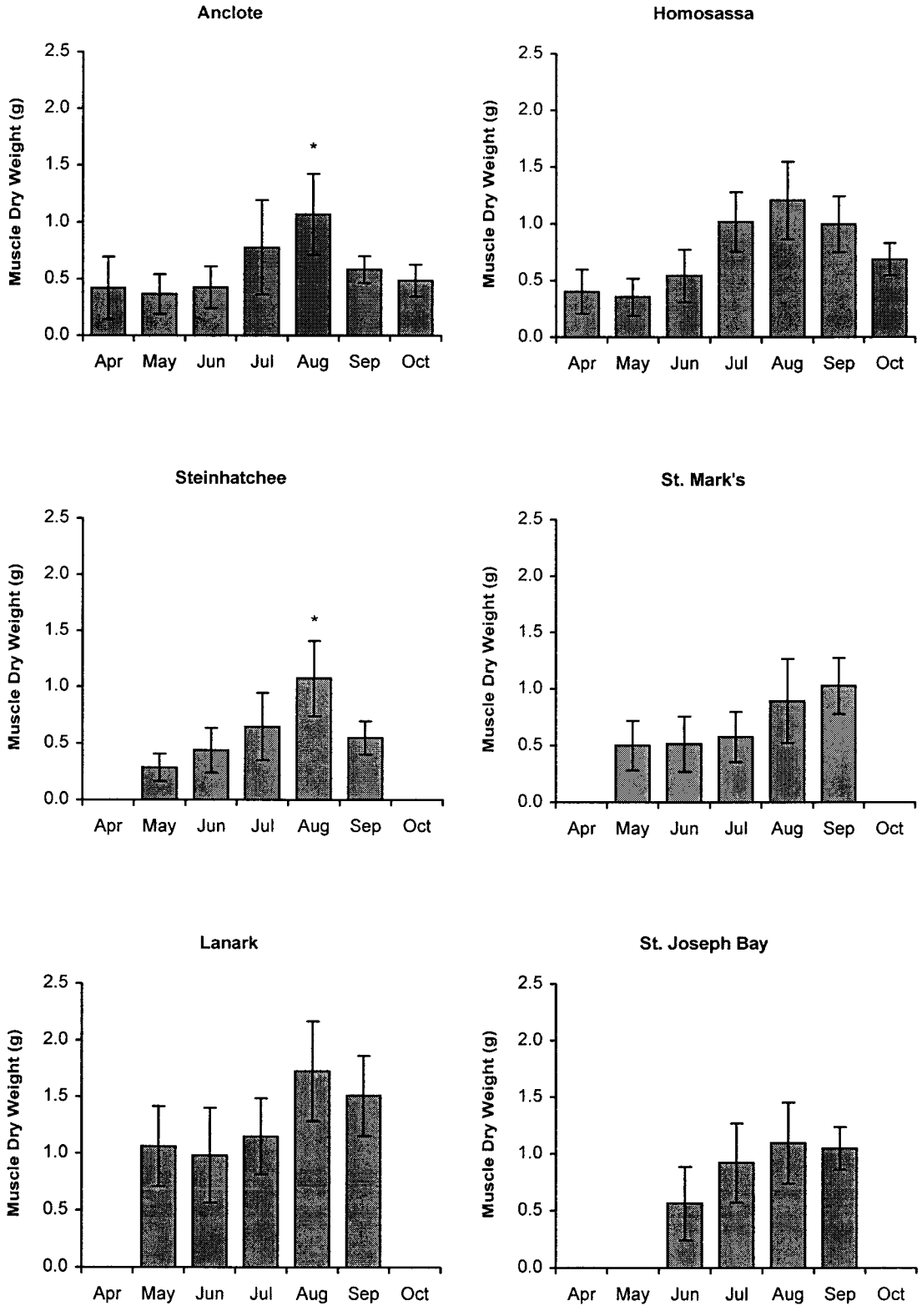

Anclote
Homosassa
Steinhatchee
St. Mark's
Lanark
St. Joseph Bay
Muscle Dry Weight (g)
2.5
2.0
1.5
1.0
0.5
0.0
Apr
May
Jun
Jul
Aug
Sep
Oct
*

Figure 18. Equivalent number of bay scallops required to achieve the legal bag limit, determined by estimating the volume of shell or adductor muscle of scallops collected from various sites and on various dates during May through October, 2002. Error bars represent one standard deviation. See text and Figure 1 for information on collection sites.

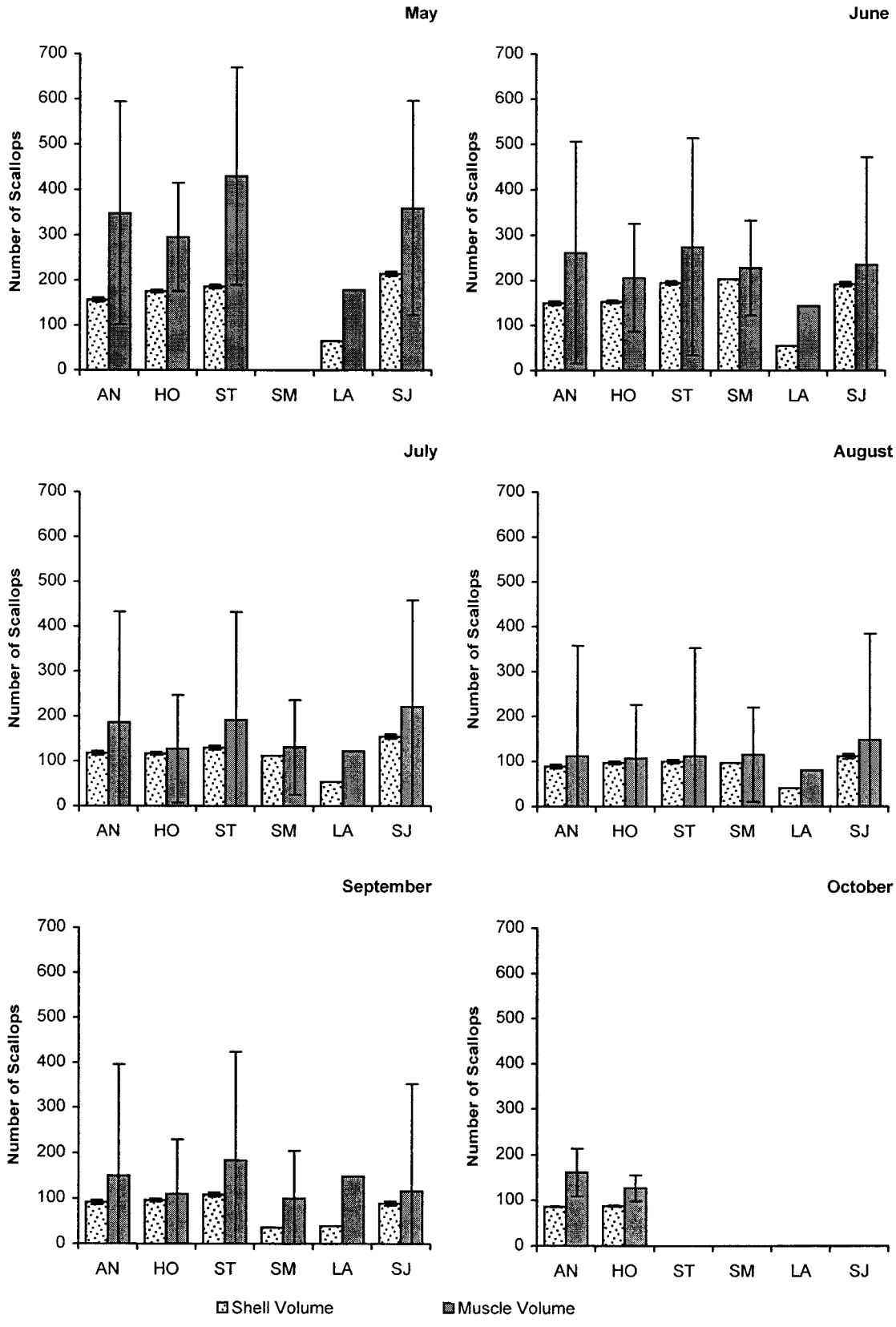

May
June
July
August
September
October
Number of Scallops
0
100
200
300
400
500
600
700
AN
HO
ST
SM
LA
SJ
Shell Volume
Muscle Volume

Figure 19. Estimates of the number of boats engaged in bay scallop recreational harvest activities, at each of the Homosassa and Steinhatchee study sites, on various dates during the 2002 harvest season. See Table 16 for additional overflight information.

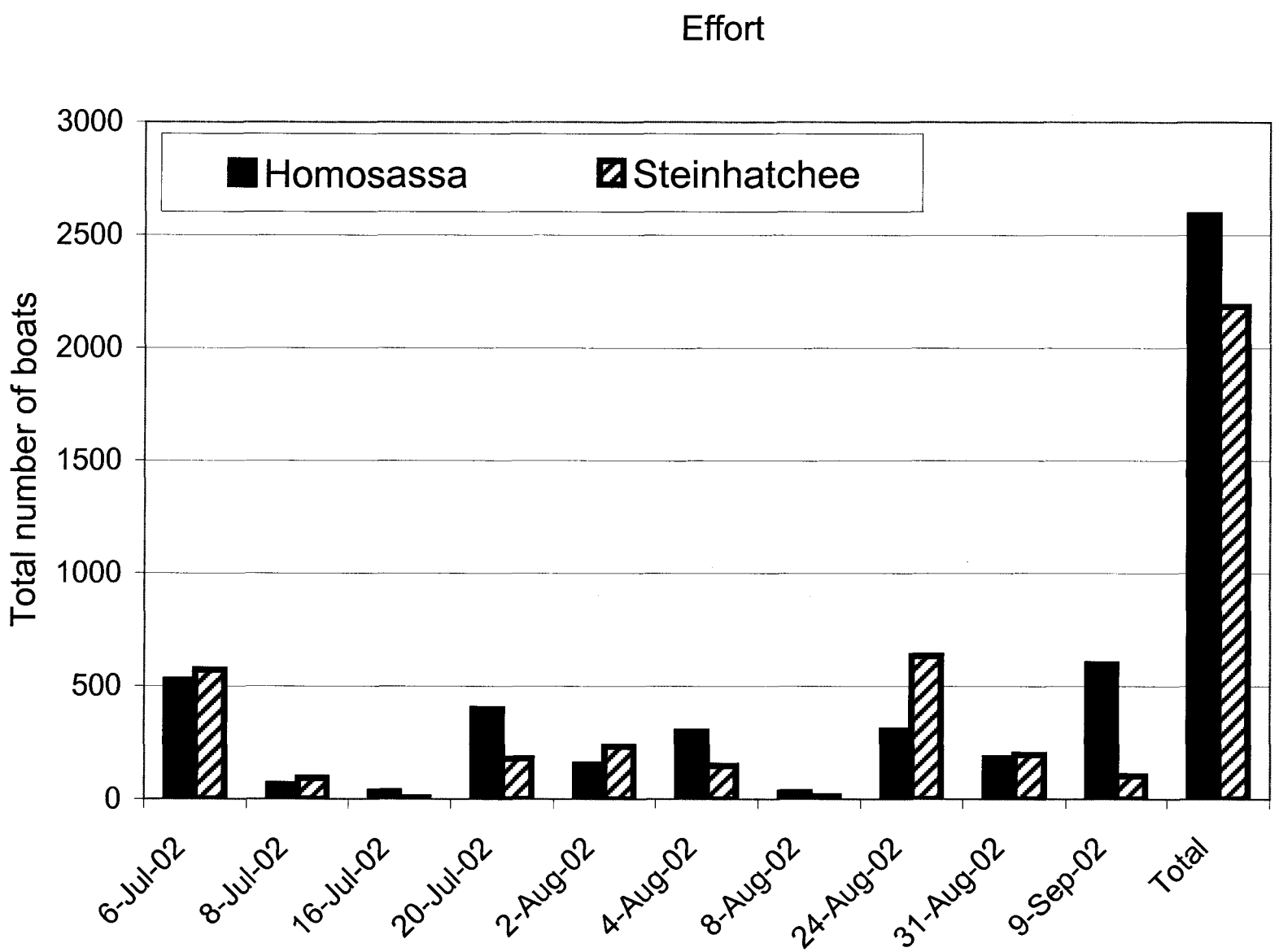
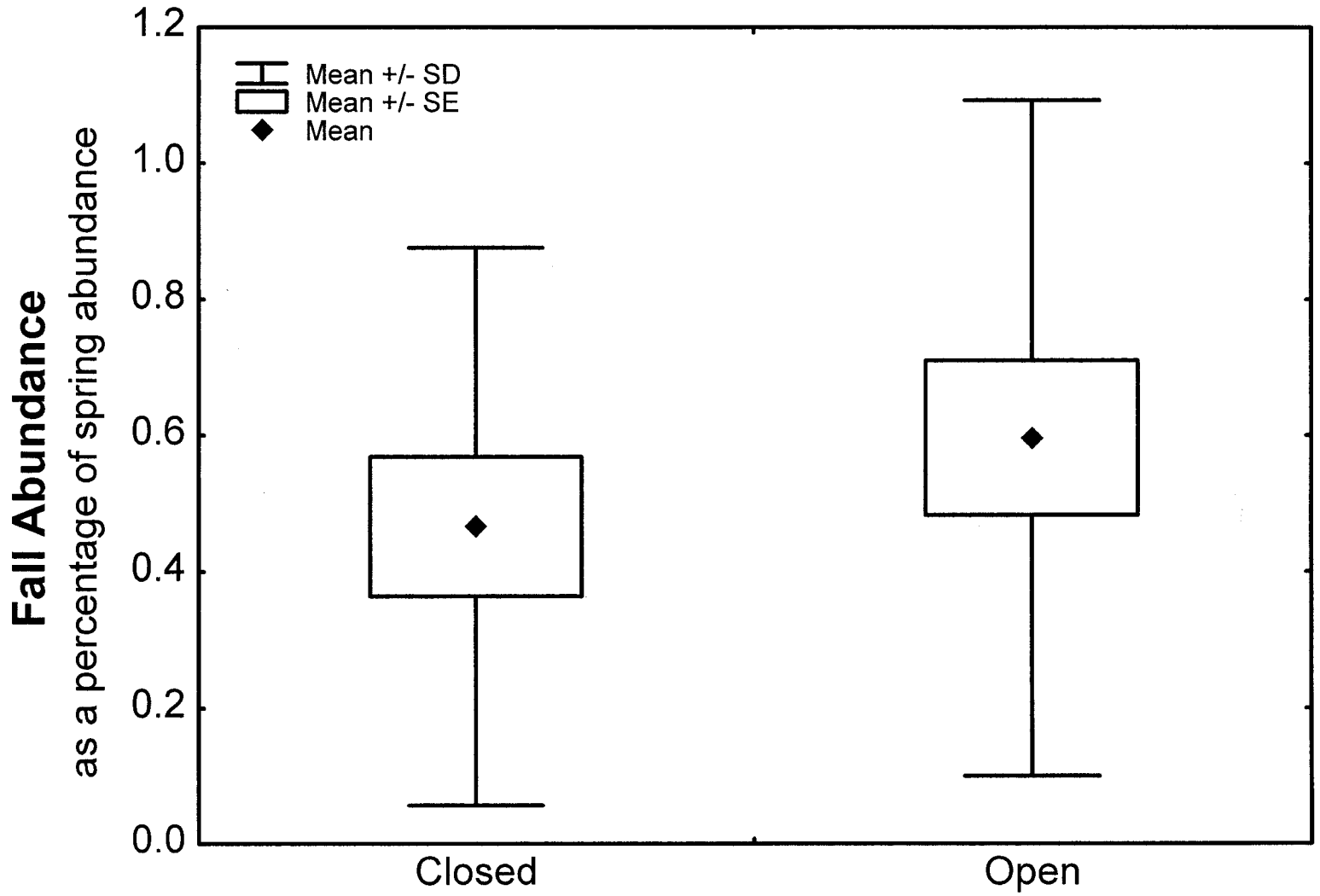

Effort
Homosassa
Steinhatchee
Total number of boats
3000
2500
2000
1500
1000
500
0
6-Jul-02
8-Jul-02
16-Jul-02
20-Jul-02
2-Aug-02
4-Aug-02
8-Aug-02
24-Aug-02
31-Aug-02
9-Sep-02
Total

Figure 20. Estimates of the percentage of scallops counted during fall surveys relative to the number counted during June surveys, compared between open and closed recreational harvesting areas. See text and Tables 10-14 for information on the sites that were included in fall surveys each year.


Mean +/- SD
Mean +/- SE
Mean
Fall Abundance
as a percentage of spring abundance
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Closed
Open

EXECUTIVE SUMMARY
Bay Scallops
William S. Arnold
March, 2003

Beginning July 1, 2002, the Florida Fish and Wildlife Conservation Commission (FWC) reopened the area from the mouth of the Suwannee River south to the Pasco-Hernando county line to recreational bay scallop harvest for the first time since 1993. Additionally, FWC closed all State waters west of the Mexico Beach Canal to scallop harvest. The Molluscan Fisheries research group at the Florida Marine Research Institute (FMRI) responded to these harvest modifications by conducting studies designed to ascertain the short-term and long-term impacts of the rules modifications.

First, FMRI continued and expanded surveys of adult scallop abundance. Results indicate that scallop density decreased in the area south of the Suwannee River but scallop density still remained relatively high. Additionally, scallops remained reasonably abundant following the recreational harvest season, indicating that scallop populations in that area were robust to the present level of scallop harvest. A survey was initiated in Pensacola Bay, and density estimates from that bay and from St. Andrew Bay/Sound (each of which lies in the western panhandle closure zone) suggest that the closing of that area to scallop harvest is warranted.

Estimates of recreational scallop fishing effort were obtained from aerial flyovers. Those data indicate that, on weekend days, a minimum of 2000 people participate in the fishery at each of the Homosassa and Steinhatchee study sites each day. Fewer participants are active on weekdays.

Studies on the timing of shell and adductor muscle growth indicate that most of the growth of these two body components is complete prior to the beginning of the harvest season. Nevertheless, the size of both the shell and the adductor muscle (each of which can be used as a measure of legal harvest) differs from site to site. As a result, harvesters at some locations can collect many more scallops than can harvesters at other locations. Additionally, by shucking scallops on the water, it is possible to legally harvest more scallops than if the scallops are landed whole.