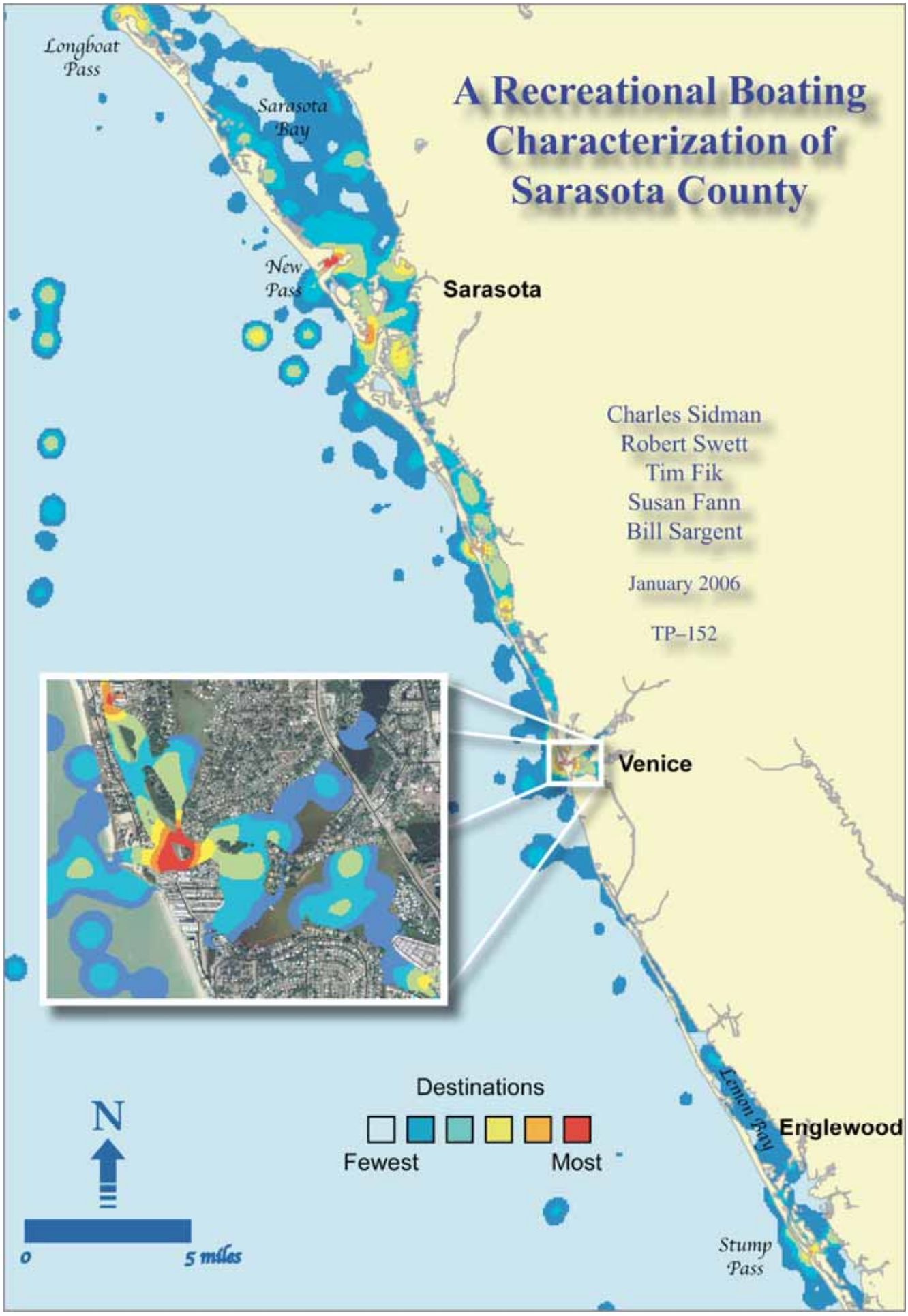
A Recreational Boating Characterization of Sarasota County
Longboat Pass
Sarasota Bay
New Pass
Sarasota
Charles Sidman
Robert Swett
Tim Fik
Susan Fann
Bill Sargent
January 2006
TP–152
Venice
Destinations
Fewest
Most
N
0
5 miles
Lemon Bay
Englewood
Stump Pass

A Recreational Boating Characterization for Sarasota County

by

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January 2006

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Acknowledgments

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Abstract

This report documents the methods and procedures implemented, during February through December 2005, to survey and characterize boaters who recreate on waterways within and around Sarasota County, on the basis of trip departure category (marina wet slip, marina dry storage, public ramp, and private dock). Vessel and boat trailer registration numbers collected at marinas and boat ramps within Sarasota County were used to obtain names and mailing addresses from the State's Vessel Title Registration System (VTRS) for marina and ramp samples. Names and mailing addresses for waterfront parcel owners obtained from Sarasota County tax records were compared to the VTRS to identify the dock sample (waterfront parcel owners that also own a boat). A map-based questionnaire was mailed to a sample of 4,650 area boaters. Questionnaire recipients marked the start and end point of their last two recreational boating trips, traced their travel routes, identified their favorite boating destinations, and the primary activities that they engaged in while at a particular destination. In addition, much descriptive data about boaters' trips—including preferences for selecting trip departure sites and travel routes, activities conducted, vessel types, and the timing, duration, and frequency of use—was collected and can be linked to the mapped data. Lastly, a content analysis identified important issues and needs from the perspective of the Sarasota County boating community. This information is intended to assist Sarasota County with prioritizing and improving waterway access and maintenance, optimizing boat facility siting, and targeting available resources to those issues of greatest concern to the boating community.

Chapter 1. Introduction

Background

Boating is a key element in Florida's coastal lifestyle and growth phenomena. According to the National Marine Manufacturers Association (2005), Florida ranks first in the nation in recreational boat registrations with more than 946,072 registered or titled pleasure boats. This represents approximately one boat for every 17 residents. Of equal note, Florida is the number one U.S. destination for marine recreation—including saltwater boating—with an estimated 4.3 million participants (Leeworthy and Wiley, 2001). Coastal development, the ever-increasing number of boaters, and the diversity of recreational boating activities that now take place within Florida's coastal bays, estuaries, and waterways have had positive economic impacts, but also have profoundly altered the coastal estuarine environment (Letson, 2002; Antonini, Fann and Roat, 1999).

Sarasota County faces a dilemma that is common to Southwest Florida's coastal communities: how to balance growth in recreational boating and associated coastal development with conservation and management of natural resources. As the number of boats that ply coastal waterways increases, so does the need for enhanced public access, maintenance of waterway infrastructure, boater safety and education, and environmental protection. To help meet these needs, Sarasota County requires spatial information that describes the activities, use-patterns, and inclinations of the boating community. To date, however, such information has not been readily available to resource managers and planners. To overcome data limitations Sarasota County requested this study to provide baseline boating information that delineates spatial trends of waterway use (e.g., departure origins, boating destinations, and intervening travel routes) mapped within a geographic information system (GIS). Collection of demographic (e.g., seamanship skills, local knowledge, motivations, and perceptions) and trip information (e.g., starting time, duration, activities, and frequency of trips) to characterize the spatial data was of equal importance to the County's waterway planning and management efforts.

The information provided by this study also satisfies a principal element of the Sarasota County Manatee Protection Plan; namely, a profile of recreational waterway use. The information generated by the study can serve to advance objectives pertaining to a variety of County programs, above and beyond those of the Manatee Protection Plan. Examples of ways that boating pattern information can be used to improve public waterway access and aquatic resource management and to address boater's concerns include:

- Categorization and spatial representation of boater departure sites, routes, and destinations to address community concerns regarding waterway access, maintenance, signage, and facility siting.

- Comparison of boating information with other spatial (GIS) data layers (e.g., environmental, development patterns) to help guide resource and public safety management.

- Temporal and activity-derived spatial profiles to identify and map boating pressure "hot-spots" on county waterways.

- Identification of boating-related problems and their solutions as input to management strategies and communications products that target available resources to issues of greatest concern.

This study, while focusing on Sarasota County waterways, also contributes to a regional picture of recreational boating patterns within the four counties of the West Coast Inland Navigation District (WCIND): Manatee, Sarasota, Charlotte, and Lee counties. Sarasota County's commitment to a recreational boating study prompted the Florida Fish and Wildlife Conservation Commission's Fish and Wildlife Research Institute to initiate a concurrent study for the greater Charlotte Harbor boating region that consists of Charlotte and Lee counties (Sidman, Swett, Fik, S. Fann, D. Fann and Sargent, 2005). The boating information collected also overlaps with similar data obtained during a previous recreational boating characterization for the Tampa and Sarasota Bay region (Sidman, Fik and Sargent, 2004) and earlier projects in Charlotte Harbor (Gorzelany, 1998; Gorzelany, 1999; Gorzelany, 2000; Sidman and Flamm, 2001). These complementary efforts will serve to complete a baseline recreational boating profile for the WCIND and mesh with a statewide project that aims to evaluate waterway access throughout Florida. During the first phase of the statewide access project, boating facilities will be inventoried, characterized, and mapped. The second phase of the statewide project will consist of an analysis to determine the economic impact of recreational boating. Lastly**,** information collected as part of this recreational boating characterization complements aerial surveys to determine boat traffic and volume within Sarasota County's coastal areas, to be conducted in a related and concurrent project sponsored by Sarasota County.

This report documents the data collection, compilation, and descriptive analysis components of a mail survey to characterize recreational boating within Sarasota County's coastal waterways.[1] The report presents (1) the questionnaire and related correspondence; (2) the sample design and results of the mailing; (3) a GIS density analysis that depicts the spatial distribution and clustering of trip information reported by survey respondents; and (4) a set of descriptive statistics that characterize boating groups, activities, perceived problems, and solutions to problems.

Study Goal and Objectives

This project's goal was to obtain baseline information that can be used to describe and map the preferences, activities, and water-use patterns of boaters who use Sarasota County waterways, on the basis of waterway access facility type, (i.e., marina wet-slips, dry storage facility, public ramp, or private dock). Specific objectives included (1) implementation of a mail

[1] A survey of boaters who use the Myakka River and Upper Charlotte Harbor boating regions was conducted as part of a concurrent recreational boating characterization of the Greater Charlotte Harbor (Sidman, Swett, Fik, S. Fann, D. Fann, and Sargent, 2005).

survey to acquire spatial and behavioral information from boaters that use marinas, dry storage facilities, public ramps, and docks (2) construction of GIS spatial databases that map trip departure sites, destinations, travel routes, and congested areas; and (3) completion of descriptive analyses of boating patterns and activities consistent with that performed for the Tampa and Sarasota Bay recreational boating characterization (Sidman et al., 2004).

Study Region

Sarasota County's system of waterways has been described as "the most precious jewel of the southwest Florida coast" (Antonini et al., 1999). Recreational boaters are attracted to this region by its many barrier islands, beaches, exposed sand spits, and protected waters that provide excellent opportunities for small-craft fishing, cruising, nature viewing, and picnicking/socializing. The Sarasota County boating region identified for this study comprises roughly 700 square miles and includes portions of the Gulf of Mexico, and interior bay waters that include portions of Big Sarasota Bay, Little Sarasota Bay, Roberts Bay, Blackburn Bay, the Gulf Intracoastal Waterway, Venice inlet, and portions of Lemon Bay (Figures 1 and 2). An estimated 22,569 pleasure boats are registered in Sarasota County according to the Florida Department of Highway Safety and Motor Vehicles (DHSMV), Vessel Title Registration System (VTRS) 2005 "data sales" database. This represents a 71% increase in the number of registered vessels in the County since 1980 (Bureau of Economic and Business Research, 1981).

Figure 1. The Sarasota County Study Area.

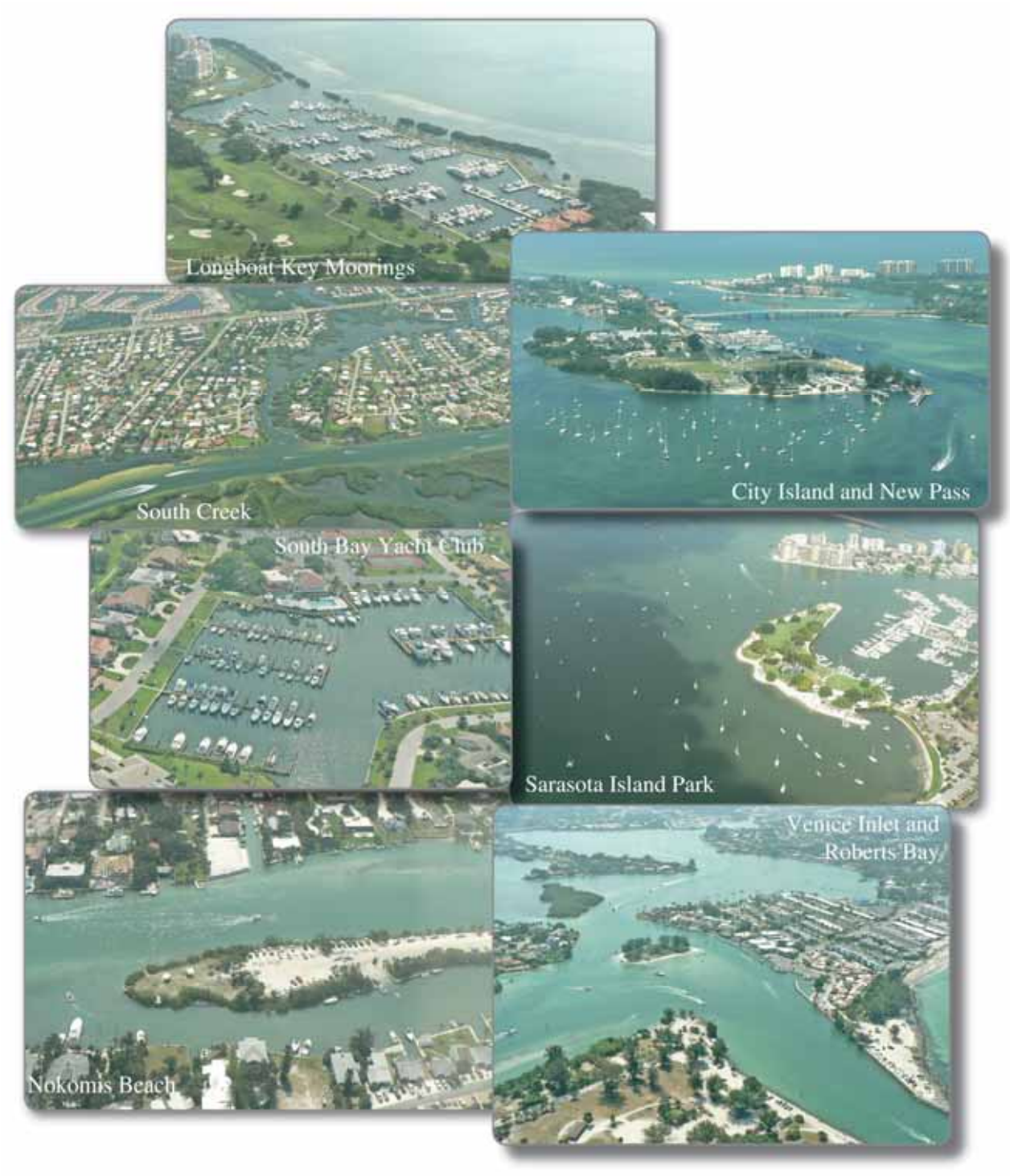

Figure 2. Popular Sarasota County Boating Locales.

Chapter 2. Mail Survey

Survey Instrument

A mail survey is an established method for acquiring spatial and behavioral information from boating communities (West 1982; Falk, Graefe, Drogin, Confer, and Chandler 1992; Antonini, Zobler, Sheftall, Stevely and Sidman, 1994; Antonini, West, Sidman and Swett, 2000). The survey instrument developed for this study was patterned after similar studies (West, 1982; Falk et al., 1992; Sidman and Flamm, 2001; Sidman, et al., 2004) and consisted of a two-sided 22 X 34 inch questionnaire that folded in quarters to 8.5 X 11 inches (see Appendix A for the survey instrument and associated correspondence). The questionnaire contained a 1:79,200 scale map (1 inch equals 1.25 miles) of the Sarasota County coastal boating region on one side; the reverse side consisted of 27 questions divided into the following topical areas:

1. Description of primary vessels owned and operated
2. Description of last two pleasure boating trips
3. Description of favorite boating destinations and activities
4. Description of survey respondent
5. Open questions to identify perceived problems and needs

The following items accompanied each mailed questionnaire;

1. A cover letter that explained the study
2. A Sarasota County Boater's Guide developed by the FWRI
3. A postage paid return envelope with postal permit indicium

In addition, a 4 X 6 inch card was mailed approximately two weeks after the initial mailing as a reminder to survey recipients to complete and return the questionnaire.

The questionnaire asked survey recipients to mark, on the map, the location of the trip departure sites, travel routes, favorite destinations, and congested areas associated with their last two pleasure boating trips. Complementary questions allowed recipients to characterize their last two trips according to vessel types used, the departure date and time, and time spent on the water. In addition, recipients were asked the number of days per month that they take trips and the primary activities that they engaged in while at a favorite destination. They were also asked to identify and rank reasons for selecting departure sites and travel routes. Finally, a series of open-ended questions addressed problems and needed improvements.

Sample Design

The sample design was developed to acquire information to profile four discrete boater populations that use the Sarasota County coastal boating region: boaters that access waterways via (1) marina wet slips, (2) dry storage facilities, (3) public ramps, and (4) private docks.

The sample size required for each of the four boater groups that access Sarasota County waterways is a function of the desired confidence interval and confidence level. Given a total population of finite size, N, a tolerable error amount, e, and a desired confidence level as specified by the normal random variate, z, the required sample size, n, for estimating a population proportion, p, is determined by:

$$n = \frac{N z^2 p(1-p)}{(N-1)e^2 + z^2 p(1-p)}$$

Population estimates for marina wet slip, marina dry storage, and dock origin-type categories (Table 1) were determined by reviewing Sarasota County Regional Waterway Management System (RWMS) data, collected by Antonini and Box (1996) and Antonini, Swett, Shulte and Fann (2000) and by visiting Sarasota County marinas and dry storage facilities. The ramp user population (Table 1) was estimated by analyzing information contained in the VTRS according to the following criteria:

1. Sarasota County registration.[2]
2. Vessel type equal to “open motorboat” or “cabin motorboat.”
3. Vessel length greater than 8 feet and less than 26 feet.

Table 1. Estimated Survey Requirements.

Data Source	Water Access Type	Boater Population Estimate	Sample Required	2003 Existing Sample	Needed Sample	Estimated Questionnaires Required
RWMS*	Marina Wet Slip	818	262	65	197	985
RWMS	Dry Storage	1,404	302	47	255	1,275
VTRS**	Public Ramp	10,692	371	65	306	1,530
RWMS	Private Dock	4,336	353	181	172	860
TOTALS		**17,250**	**1,288**	**358**	**927**	**4,650**

*Regional Waterway Management System

**Vessel Title Registration System

[2] The population of boaters that were sampled at ramps extends beyond the population of "boaters registered in Sarasota County;” (i.e., it includes boaters from other counties). Unfortunately, the market area for Sarasota County ramps is not known. The true population of Sarasota County ramp users is likely larger than the estimate which was based on the best available information.

The estimated ***sample required*** (Table 1) for each water-access type was determined based on a tolerable error of ± 0.05 and a confidence level of 95 percent (z = 1.96). The ***estimated questionnaires required*** (Table 1) is a function of (1) the ***existing sample*** obtained from the 2003 survey of Sarasota County boaters, as part of the Tampa and Sarasota Bay recreational boating characterization, (2) the ***needed sample***—the difference between the sample required and the existing sample, and (3) a ***return rate multiplier*** that assumed a 20 percent return rate based on return rates from previous surveys of southwest Florida boaters (Antonini et al., 1994; Antonini et al., 2000; Sidman and Flamm, 2001; Sidman, et al., 2004). In contrast to the randomly sampled ramp and dock populations all boaters that were associated with vessels identified in marina wet and dry storage facilities and for whom names and addresses could be obtained received a questionnaire. Ownership information was obtained for approximately 92% of vessels observed in marina wet slips and dry storage facilities (937 of 1,021 vessels inventoried). The objective was to survey as many users as possible associated with marina wet slip and dry storage facility types given the relatively small numbers of boaters associated with these waterway access categories. Additional surveys (above and beyond estimated needs) were mailed to ramp and dock populations to better ensure that adequate samples were obtained for these groups.

Sample Selection

Automobile and boat trailer registration numbers collected at Sarasota County boat ramps (Table 2) and vessel bow numbers collected at marinas (Table 3) were used to obtain names and mailing addresses from the state's Automobile, Trailer and Vessel Title Registration databases. In this way, registration information was used to identify the names and mailing addresses of patrons of public boat ramps, marina wet slips, and marina dry storage facilities. In addition, the name and mailing address of owners of observed documented vessels were obtained from the United States Coast Guard (USCG) documented vessel database.

During March through May 2005, Florida Sea Grant personnel visited nine public ramps in Sarasota County (Figure 3) and recorded 3,258 unique license plate numbers of both the boat trailer and the towing vehicle. This information was compared to DHSMV vehicle and trailer registration information to provide 2,273 VTRS matches for names and mailing addresses (Table 2) from which 2000 ramp patrons were randomly selected to receive a questionnaire.

During February through March 2005, Florida Sea Grant personnel visited all known marinas and dry storage facilities located in Sarasota County to record bow numbers from vessels stored in wet slips and in dry storage (Table 3; Figure 4)[3]. Florida Sea Grant personnel logged bow numbers from 401 vessels moored in wet slips and 620 vessels kept in dry storage facilities. Wet slip and dry storage capacity was also obtained from interviews with facility managers (Table 3). The name and hailing port of documented vessels were also obtained and used to acquire additional names and mailing addresses from the USCG documented vessel database. Due to the comparatively small number of vessels kept in marinas and dry storage facilities, a questionnaire was mailed to all patrons for whom names and addresses could be acquired from the DHSMV or USCG databases.

[3] Access was denied at three of the 15 marinas visited.

Names and mailing addresses for waterfront parcel owners obtained from county tax records were compared to the VTRS to identify the private dock sample. The owner's name, street number, street name, and ZIP code obtained from county tax records were combined and compressed into one concatenated field. A similar compression procedure was undertaken for VTRS owner name, address, and zip code fields. Compressed name and address information for all waterfront parcels was then linked to the corresponding compressed VTRS information to identify matches. Matches ensured that only those waterfront parcel owners who also own boats were included in the sample. An ArcGIS program downloaded from the ESRI website was used to select a random spatial sample of 1,663 dock owners from the 1,942 VTRS/parcel matches (Figure 5).

Table 2. Unique Tag Numbers Collected and VTRS Matches by Public Ramp.

Sarasota County Ramp Name	Number of Unique Tags	VTRS Matches
Blackburn Point Ridge Park	1	1
Centennial Park	1,301	692
Higel Marine Park	108	88
Indian Mound Park	108	93
Ken Thompson	448	393
Manasota Beach	34	26
Nokomis Beach	486	387
Turtle Beach	276	207
Venice Marina Park	496	386
TOTAL	**3,258**	**2,273**

Table 3. Vessel Bow Numbers Collected from Marinas.

Sarasota County Marina Name	Wet Capacity	Dry Capacity	Wet Slips Inventoried	Dry Storage Inventoried
Bahia Mar Apartments Marina	35	0	25	0
Bird Key Yacht Club	47	0	47**	0
Dock On the Bay	20	0	8	0
Dockside Marine	0	230	0	122
Gulf Harbor Marina	0	269	**Access Denied**	**Access Denied**
Holiday Inn Airport Marina	60	0	41	0
Longboat Key Moorings	296	0	141	0
Marina At the Landings	0	100	0	34
Marina Jack	225	0	122	0
Marine Max	0	256	0	219
Phillippi Shores Marina	0	90	0	73
Sara Bay Marina	0	120	**Access Denied**	**Access Denied**
Sarasota Yacht Club	105	0	**Access Denied**	**Access Denied**
Spindrift	5	194	3	94
Turtle Beach Marina	25	145	14	78
TOTALS	**818**	**1,404**	**401 (379)***	**620 (558)***

*VTRS name and address matches are shown in parentheses.

**An additional 58 members of the Bird Key Yacht Club received a survey.

Figure 3. Sarasota County Public Ramps Surveyed.

Figure 4. Sarasota County Marinas Surveyed.

Figure 5. Spatial Distribution of the Sarasota County Private Dock Sample.

Survey Return Breakdown

Questionnaires were mailed between May 27 and June 6, 2005. The quantity of surveys that were ultimately mailed to each user-group, identified in Table 4, was determined by the number of names and mailing addresses identified from the VTRS, USCG, or county tax roles. For example, a total of 459[4] questionnaires were mailed to marina wet slip users although 985 surveys were estimated as being necessary to meet minimum sample sizes given a return rate of 20 percent. The shortfall is due to the comparatively small number vessels associated with Sarasota County marinas. A similar shortfall occurred for the dry storage facility category. Many of those vessels likely had expired registrations and were, therefore, not included in the 'active registration' VTRS database that was obtained from the DHSMV. Conversely, mailings for the larger public ramp and private dock user categories exceeded the estimated minimum mailings required.

A reminder card was sent to individuals who had not yet returned the questionnaire two weeks after a wave of surveys had been mailed. A total of 973 useable surveys were returned (15 returned surveys could not be used) resulting in an overall return rate of 21 percent. When combined with information from the earlier Tampa Bay and Sarasota Bay survey the sample size benchmark (tolerable error of ± 0.05 and a confidence level of 95 percent) was exceeded for public ramps and private docks, but not for marina wet and dry storage facilities. The relatively small number of returns from users of marina wet slips (73) and dry storage facilities (102) was due to (1) the small number of marina facilities in Sarasota County, (2) the comparatively small number of vessels observed at marina facilities, and (3) the response rate. When combined (i.e., 2005 Sarasota survey returns with 2003 Sarasota survey returns), the sample of n=138 marina wet slip and n = 149 dry storage users meet a maximum tolerable error of ± 0.076 at a confidence level of 95 percent. Summary statistics are presented in Table 4 for survey mailings and returns from the 2003 Tampa Bay and Sarasota Bay survey and the total combined samples by boater group. Return rates for the four boating categories are considered to be appropriately large and are consistent with the results of a random statewide survey of boaters (Swett, Fann, & DeLaney, 2005) which suggests that proportionate samples were obtained for statistical inferences to be made among the surveyed boater groups.

Table 4. Survey Return Breakdown.

Boater Group	Mailed (in 2005)	Returned Useable	% Return	2003 Sample	Total Sample
Marina Wet Slip	459	73	20.5	65	138
Dry Storage	519	102	19.7	47	149
Public Ramp	2,000	445	22.3	65	510
Private Dock	1,672	343	20.5	181	524
Other*	-	10	-	0	-
TOTALS	**4,650**	**973**	**20.9 Average**	**358**	**1,321**

*Ten respondents listed 'other' for boater group type.

[4] The 459 surveys mailed to marina wet slip users included 58 additional surveys that were mailed to members of the Bird Key Yacht Club.

Chapter 3. GIS Database Development

Spatial Database Design

Questionnaire recipients were asked to (1) mark the start and end point of their last two pleasure boating excursions on a map (2) draw their entire travel routes, (3) identify their favorite boating destinations along those routes, and (4) annotate the map with abbreviations for the primary activities that they engaged in while at each destination. They were also asked to indicate by the letter "C" any places on the map they considered to be congested. Spatial data collected from the 973 returned surveys were digitized into the ESRI ArcGIS geographic information system (GIS) [5]. This resulted in a sample of 1,832 trip origins, 1,832 travel routes, 2,291favorite boating destinations, and 1,195 locations of perceived congestion.

Spatial information was digitized 'on-screen' over United States Geological Survey normal color Digital Orthophoto Quarter Quadrangles (DOQQ) flown in 2004. GIS layers depicting the positions of marinas, ramps, navigation aids, and artificial reefs were used as background themes to enhance the accuracy of digitized data. Trip departure sites and congested spots were digitized as point features and each record was coded with the survey control number and trip number (i.e., first or second trip). Favorite destinations were digitized as point features and were coded with the survey control number, trip number, and the activities that a respondent engaged in at each favorite destination. Travel routes were digitized as line features and coded with the following attribute information: Survey control number, trip number, round trip or one way (if round trip, the same route often was depicted for both legs of the trip), and whether or not the trip extended beyond the study area.

The database structure allows information from survey questions to be linked to digitized spatial information via the survey control number (ID), which uniquely identified spatial and attribute information provided by each survey respondent. The selection and display of favorite destination point data within the GIS is illustrated in Figure 6 for a portion of the southern Sarasota Bay boating area. Red dots represent departure sites identified by survey respondents; green dots represent favorite destinations; yellow dots represent a sub-set of favorite destinations where survey respondents reported that they like to "nature view." The 'Select by Attributes' window - upper left corner of Figure 6 - illustrates a GIS database query that selects and displays favorite destination points that are associated with nature viewing (e.g., NV = "Y"). The 'Selected Attributes of Destinations' window - lower left corner of Figure 6 - displays all linked database records in yellow. These records share the same survey control number (ID) that meet the query criterion of nature viewing (NV). Responses by survey respondents indicate that the Bird Keys area in Little Sarasota Bay, the spoil islands in Roberts Bay, and the southern tip of Lido Key near Big Sarasota Pass are popular destinations for nature viewing.

Reported travel routes within the southern Sarasota Bay boating region are displayed in Figure 7. Pink lines represent travel routes digitized from returned surveys; red and green dots illustrate departure sites and favorite destinations, respectively. The blue line depicted in the GIS

[5] Fifteen survey respondents either did not report any spatial information or the information that they provided could not be interpreted.

view represents one travel route that has been selected for display. The corresponding database record that is 'linked' to the travel route via the survey control number ID is also highlighted blue in the 'Attributes of Routes' database window at the lower left of Figure 7.

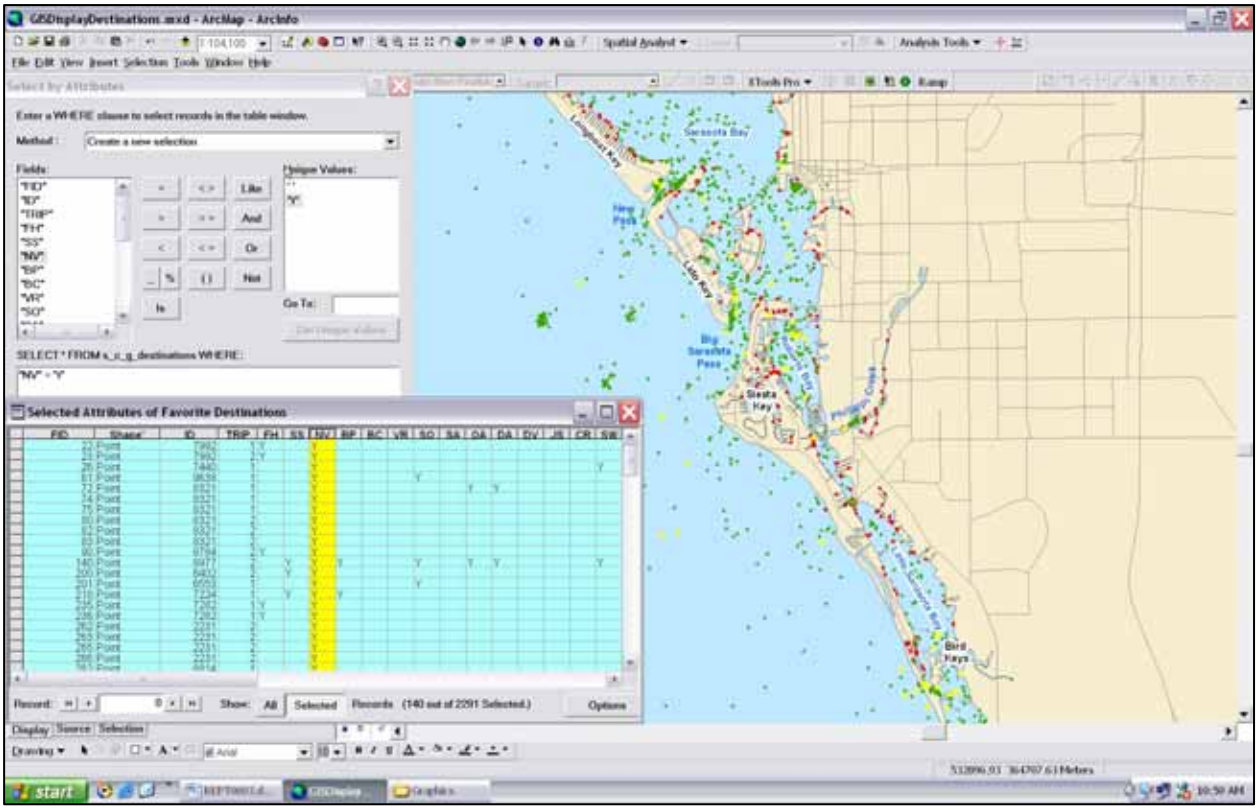

Figure 6. Example of GIS Attribute Query and Display: Nature Viewing Spots.

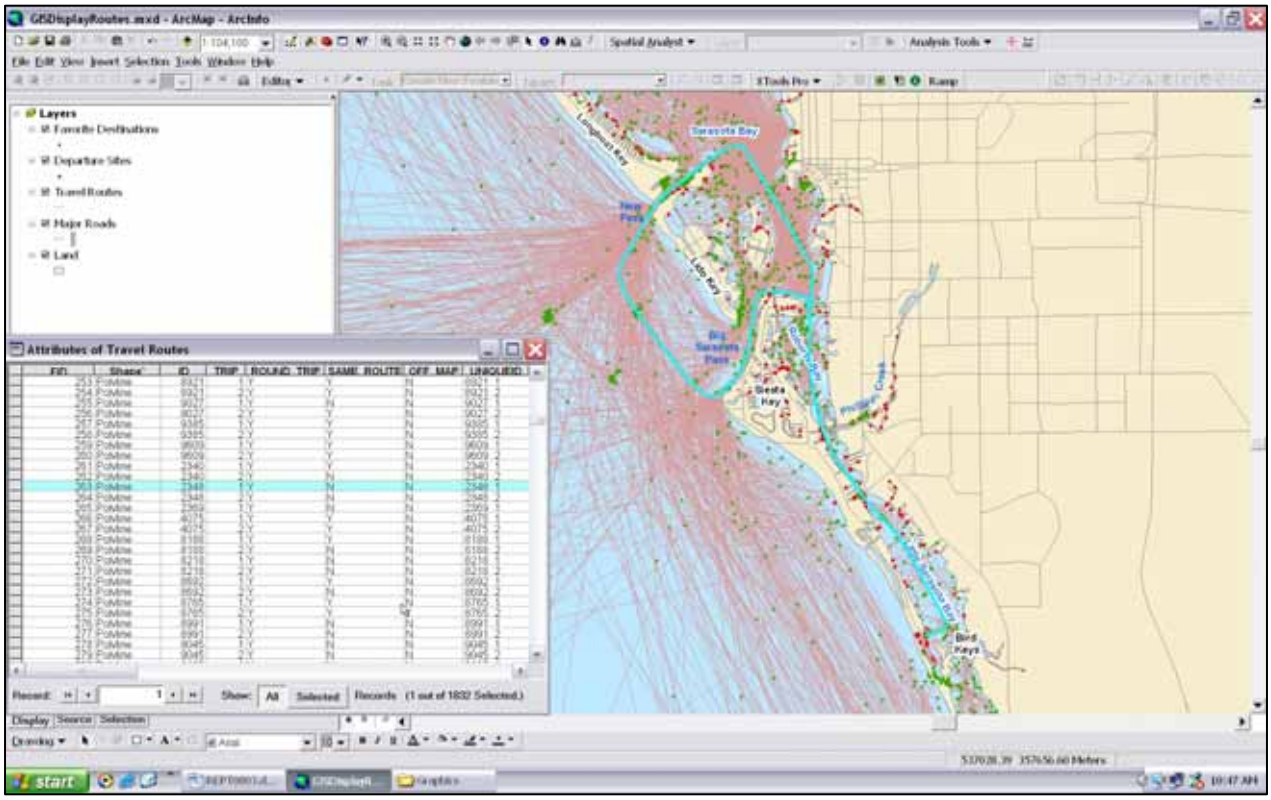

Figure 7. Example of GIS Attribute Query and Display: Reported Travel Routes.

Chapter 4. Mapping Boating Patterns

General Clustering Patterns

This chapter presents the results of a GIS analysis to map the distribution of digitized trip information as 'density of occurrence.' Continuous density surfaces generated by the GIS illustrate the degree of concentration or clustering of digitized trip information. General clustering patterns for travel routes, destinations, and congested areas were identified using 100-meter grid cells and a feature density search radius of 800 meters as mapping resolution parameters.

General route densities are depicted in Figure 8. The greatest density of vessel traffic occurs within the Gulf Intracoastal Waterway between New Pass and Venice Inlet: in particular at Venice Inlet, in southern portions of Sarasota Bay, and within Roberts Bay. Vessel traffic is more diffuse in the wider portions of Sarasota Bay and less intense along segments of the Intracoastal Waterway within Lemon Bay. Seaward of the barrier islands the flow of boat traffic is generally dispersed but follows a radial pattern to and from prominent artificial reefs in the Gulf of Mexico.

Figure 9 displays favorite destinations identified by respondents as locales they were most likely to visit on a typical recreational boating trip. The density analysis revealed several prime boating destinations: New Pass, Big Sarasota Pass, and the Venice Inlet. Secondary destination areas include the Bird Keys (closed Midnight Pass area) and Blackburn Point. The Longboat Pass (Manatee County) and Stump Pass (Charlotte County) areas also represent important boating destinations for Sarasota County boaters.

Areas where boaters experience congestion – defined in Question 20 as "more boats than you prefer" – are illustrated in Figure 10. The density analysis revealed that respondents experience the highest degree of congestion at their favorite boating destinations, including Venice Inlet, New Pass, Big Sarasota Pass, among the spoil islands in Roberts Bay, and near the Bird Keys in Little Sarasota Bay. Longboat Pass and Stump Pass also were identified as congested destinations. Among trip origins, a high degree of congestion was reported at the Centennial Park boat ramp.

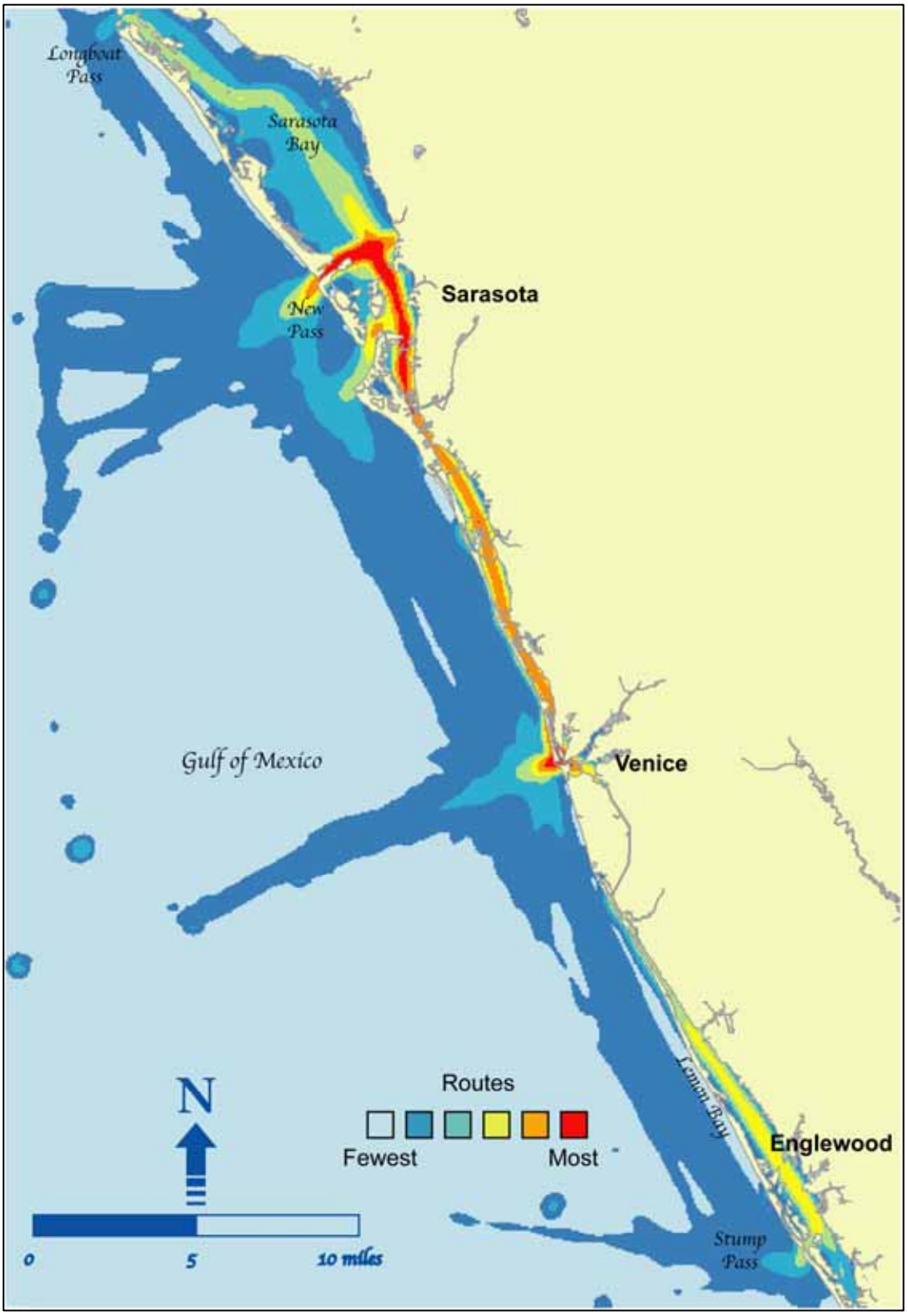

Figure 8. Travel Corridors as Summarized with the GIS.

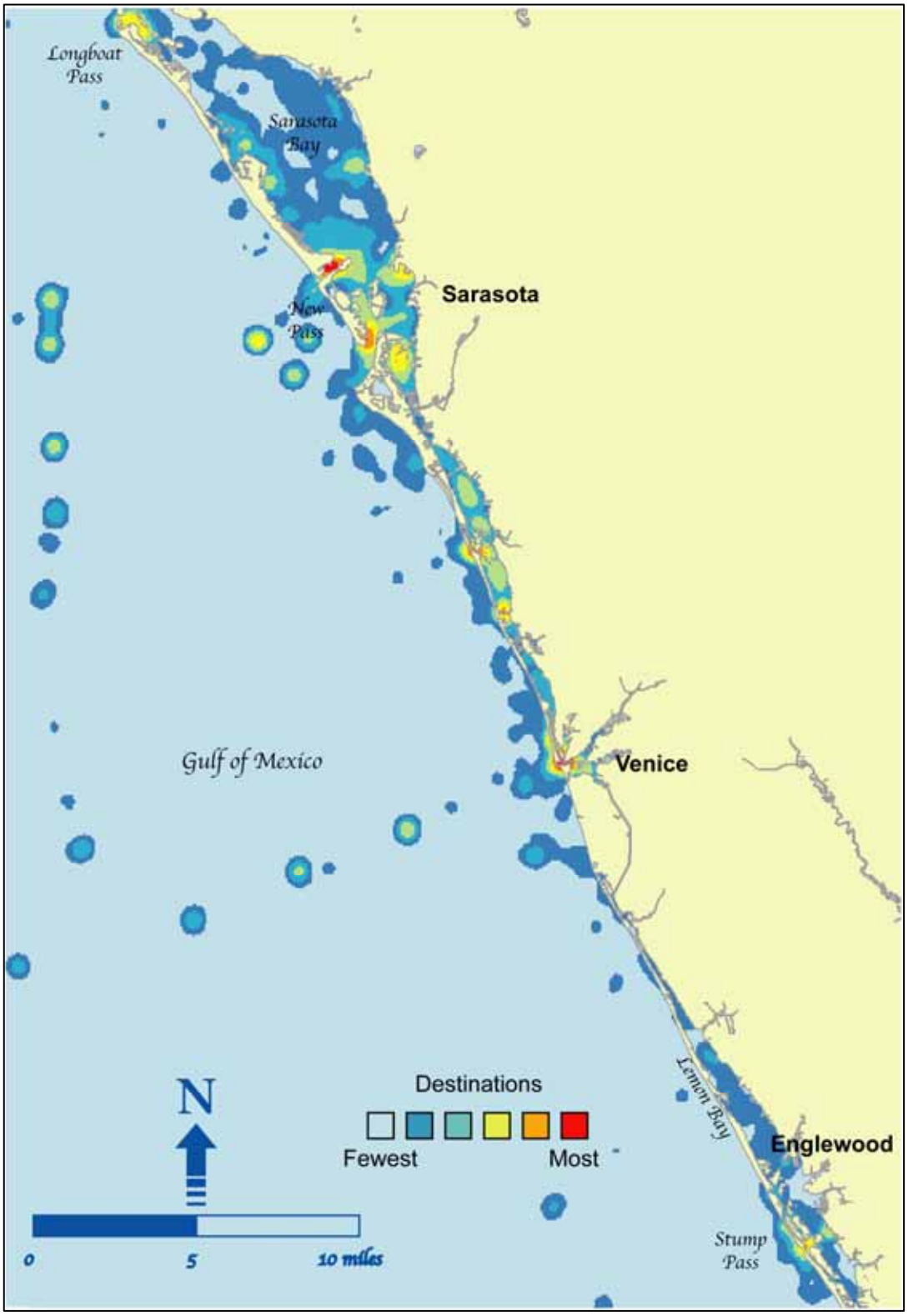

Figure 9. Favorite Destinations as Summarized with the GIS.

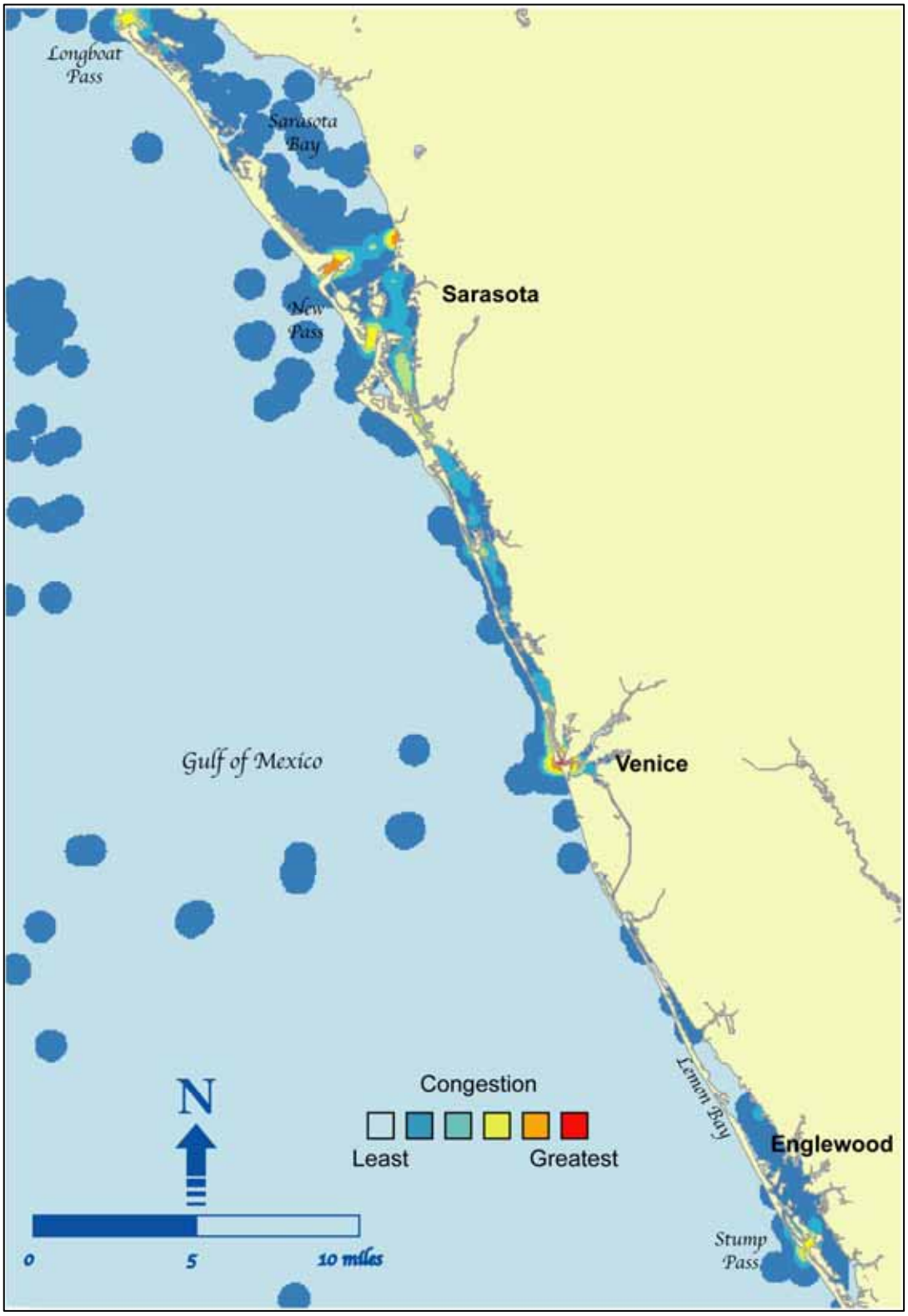

Figure 10. Congested Areas as Summarized with the GIS.

Large-Scale Mapping of Selected Locales

This section presents higher-resolution maps of use-patterns for a selection of Sarasota County boating locales that include South Sarasota Bay, Roberts Bay, Little Sarasota Bay, Blackburn Bay, Venice Inlet, and portions of Lemon Bay. The maps that illustrate clustering patterns for travel routes, destinations, and congested areas, were generated using 10-meter grid cells and a feature density search radius of 200 meters as mapping resolution parameters. Enhanced accuracy was gained by the on-screen digitizing of trip information using one-meter normal color USGS digital orthophoto quarter quadrangles (DOQQ) and navigation markers for orientation. In addition, information regarding vessel type and draft obtained from survey questions was also used to infer the location of routes with more accuracy than respondents could achieve when drawing on the small-scale survey map.

The 10-meter mapping resolution was consistent with the 10-meter masking grid developed for the spatial analysis to (1) preserve small spoil islands and narrow land bridges (e.g., causeways, spits, barrier islands) that are found within the study area and (2) to constrain the density search algorithm to water areas (i.e., to ensure that the density function did not 'jump' narrow land areas to include features that were spatially proximate yet associated with different boating locales). The 200-meter feature density search radius was selected to ensure that the results of the higher resolution mapping accurately portrayed use patterns in the narrow embayments that are prevalent within the Sarasota County coastal boating region. For example, larger search radii produced clustering patterns that 'jumped' sections of narrow barrier islands, falsely implying (at the selected larger scale mapping resolution) that high concentrations of use occurred in some open Gulfside waters. Again, the goal was to select a density search parameter that would highlight areas (such as the Intracoastal Waterway) that experience greater concentrations of boating and congestion, without including spatially proximate areas with significantly less boating activity.

Figures 11 and 12 show the density analysis results for the south Sarasota Bay region that includes New Pass and Big Sarasota Pass. Congested areas reported by survey respondents include portions of the Intracoastal Waterway in Roberts Bay, New Pass, Big Sarasota Pass, and the Centennial Park boat ramp locales (Figure 11). Figure 12 displays primary travel corridors and destination hot-spots derived from density analyses of travel routes and favorite destinations. With the exception of the Centennial Park boat ramp locale, areas of congestion coincide with favorite destinations. It should be noted that the Longboat Pass area (Manatee County) also represents a popular boating destination for Sarasota County boaters.

Little Sarasota Bay and Blackburn Bay are highlighted in Figures 13 and 14. Congestion was identified within the Intracoastal Waterway between Roberts Bay and Little Sarasota Bay and at the Bird Keys / Midnight Pass locale (Figure 13). The density analysis revealed a spot of reported congestion in Blackburn Bay near the Manasota Beach boat ramp. Primary destinations (Figure 14) in the area include the Bird Keys / Midnight Pass area and Blackburn point, which is consistent with the results of the density analysis of congested spots.

Congestion and boating patterns for the Venice Inlet area are depicted in Figures 15 and 16. Snake Island and nearby restaurants represent a focal point for activities and congestion in the area. Secondary nodes of reported congestion are observed at the Manasota Beach boat ramp and

along a constricted segment of the Intracoastal Waterway just north of Venice Inlet. A secondary destination area was identified at the restaurant associated with Gulf Harbor Marina (Figure 16).

Boating in Lemon Bay is primarily restricted to the Intracoastal Waterway. The density analysis revealed a single area of reported congestion associated with the Indian Mound boat ramp (Figure 17) and no significant destination areas within Sarasota County waterways (Figure 18). Stump Pass in Charlotte County, which lies just outside the study area, was identified as a popular destination spot for Sarasota County boaters.

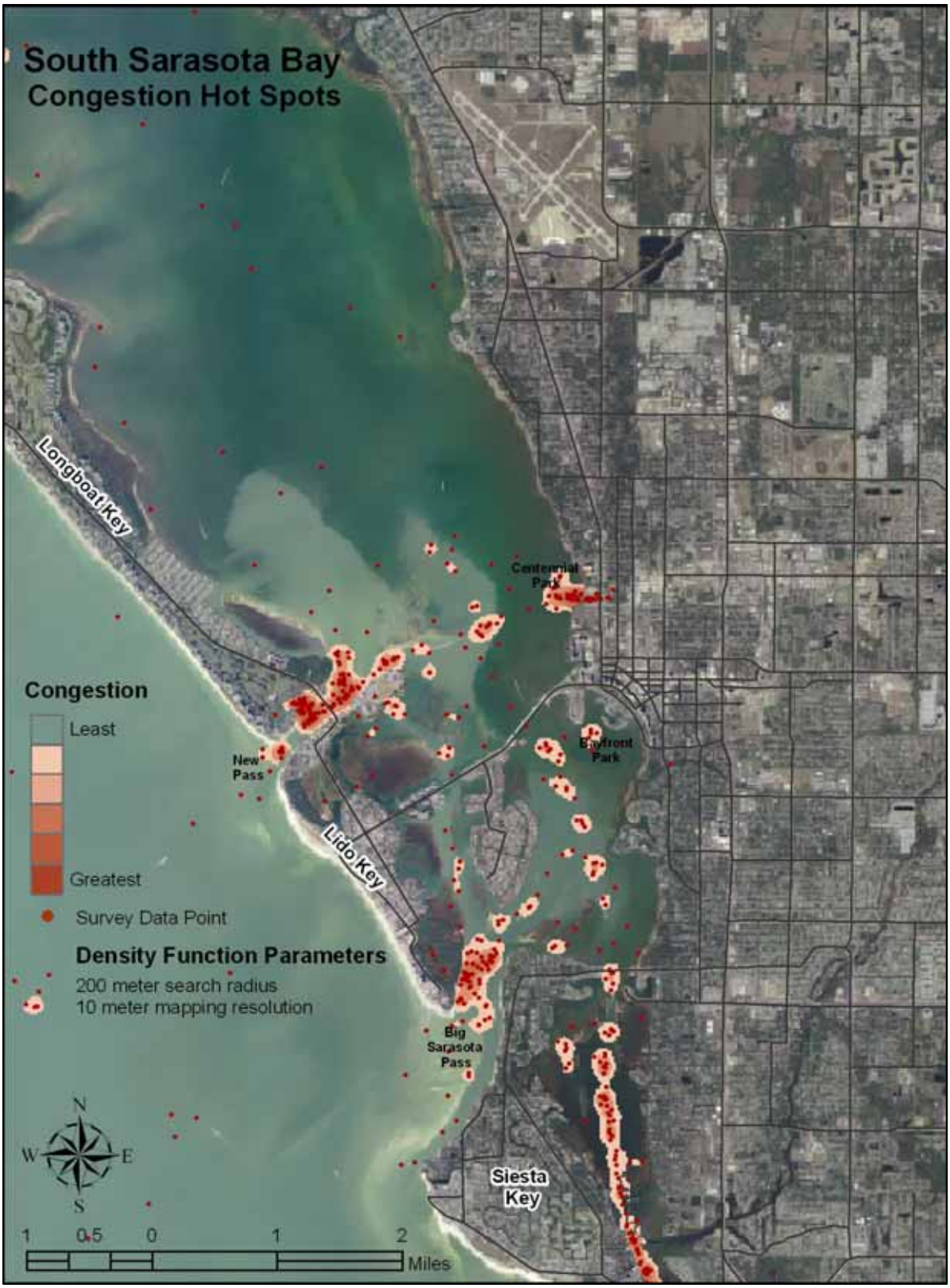

Figure 11. South Sarasota Bay: Congestion Hot Spots.

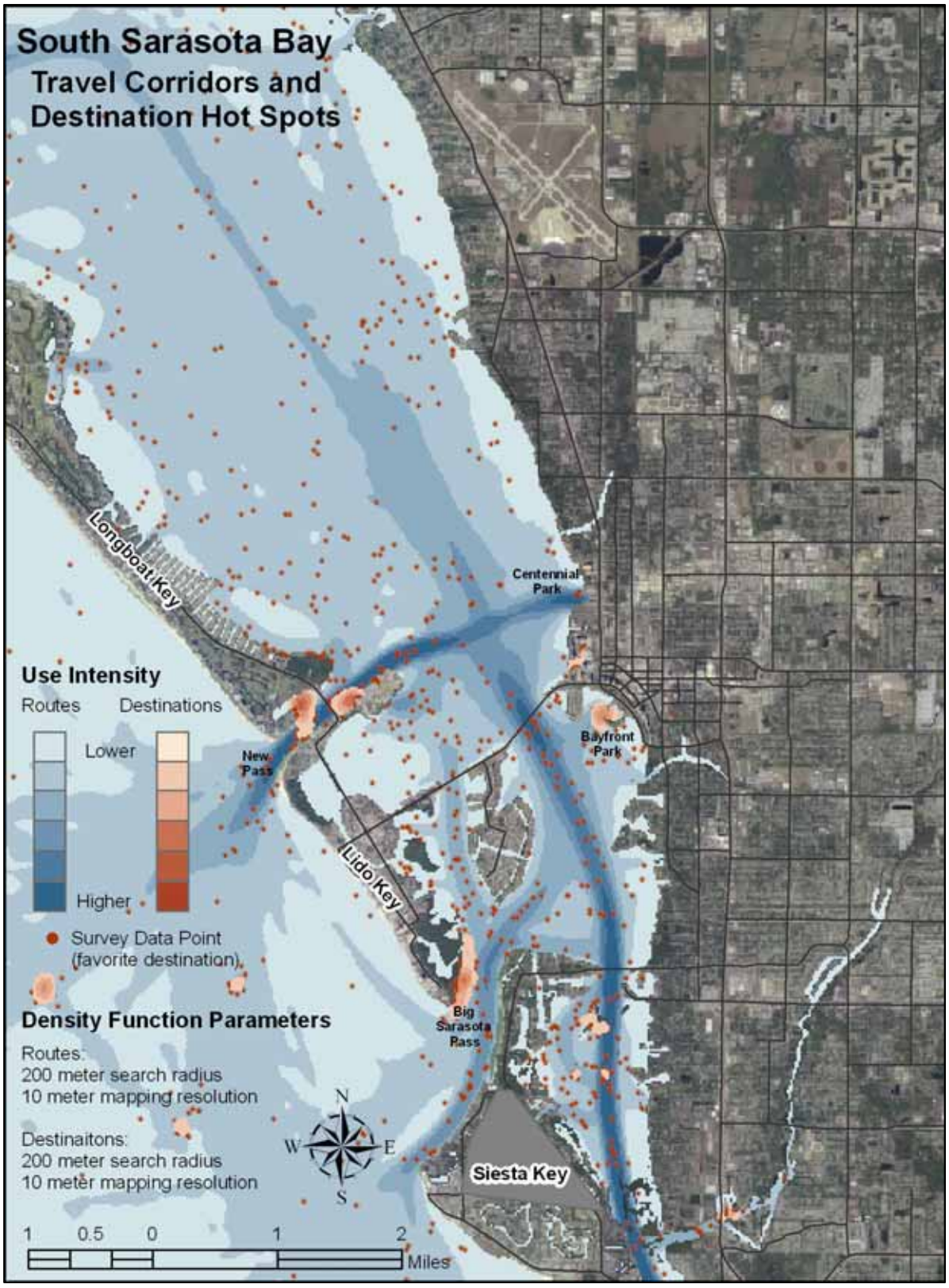

Figure 12. South Sarasota Bay: Travel Corridors and Destination Hot Spots.

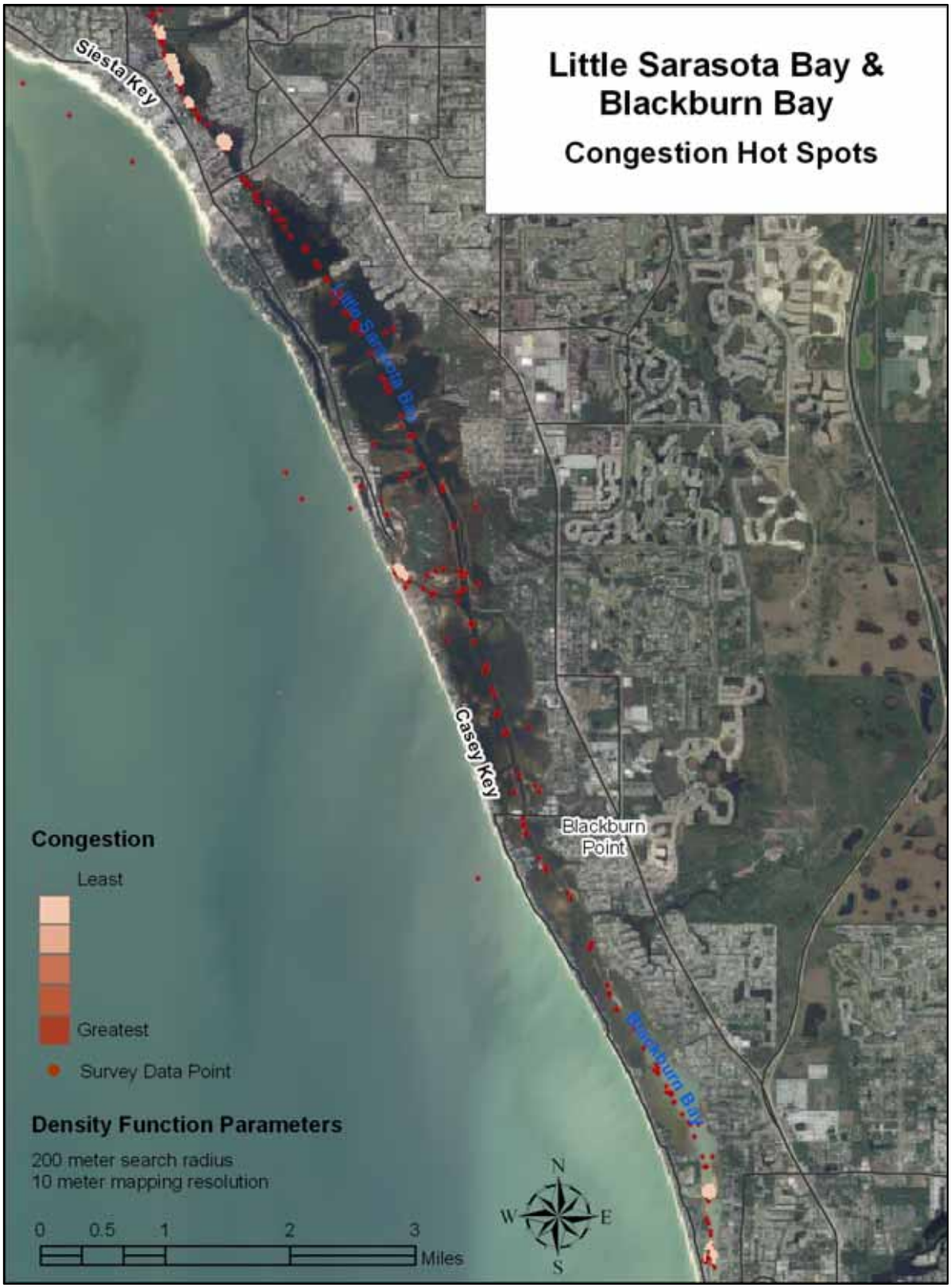

Figure 13. Little Sarasota Bay and Blackburn Bay: Congestion Hot Spots.

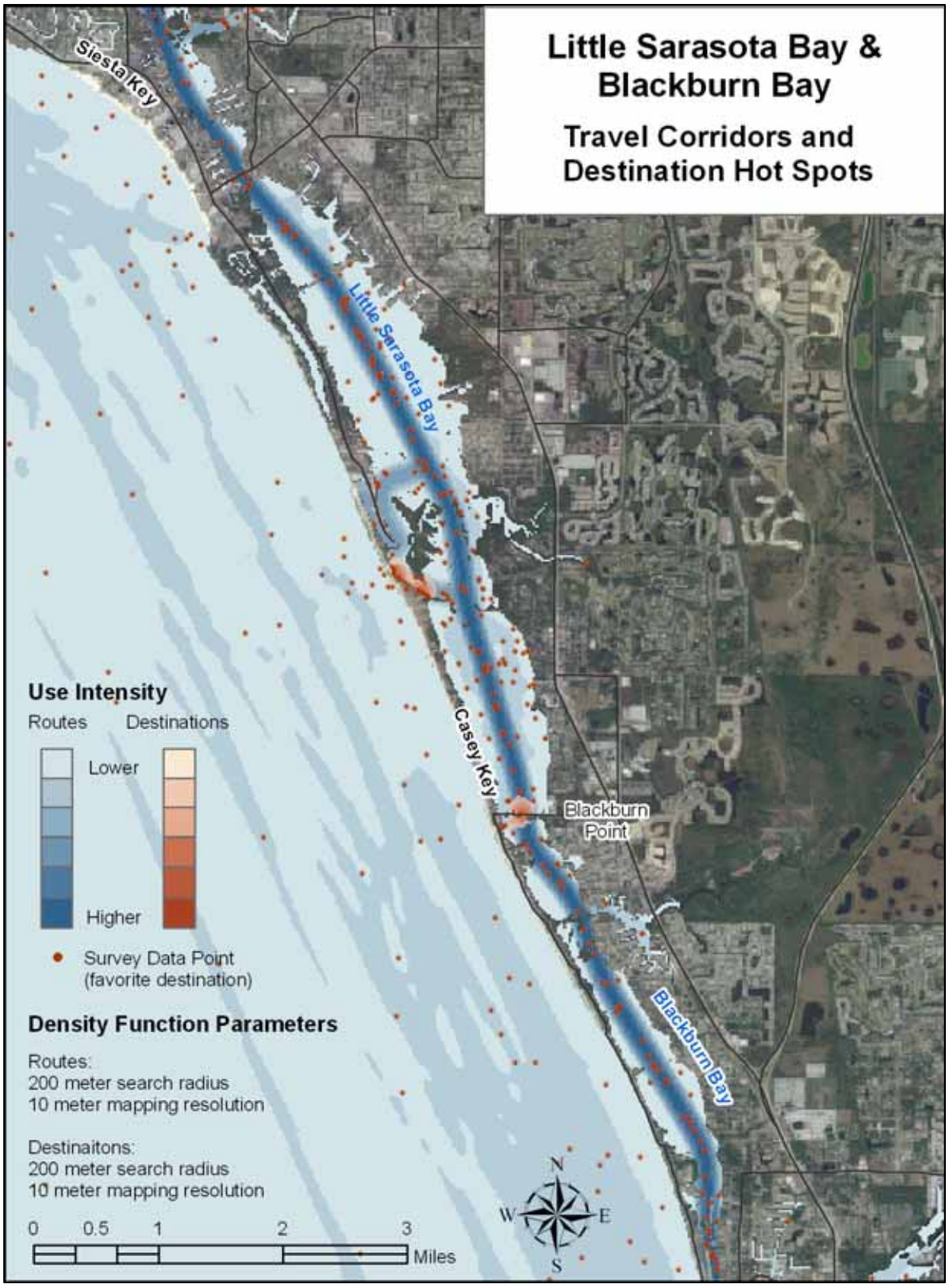

Figure 14. Little Sarasota Bay and Blackburn Bay: Travel Corridors and Destination Hot Spots.

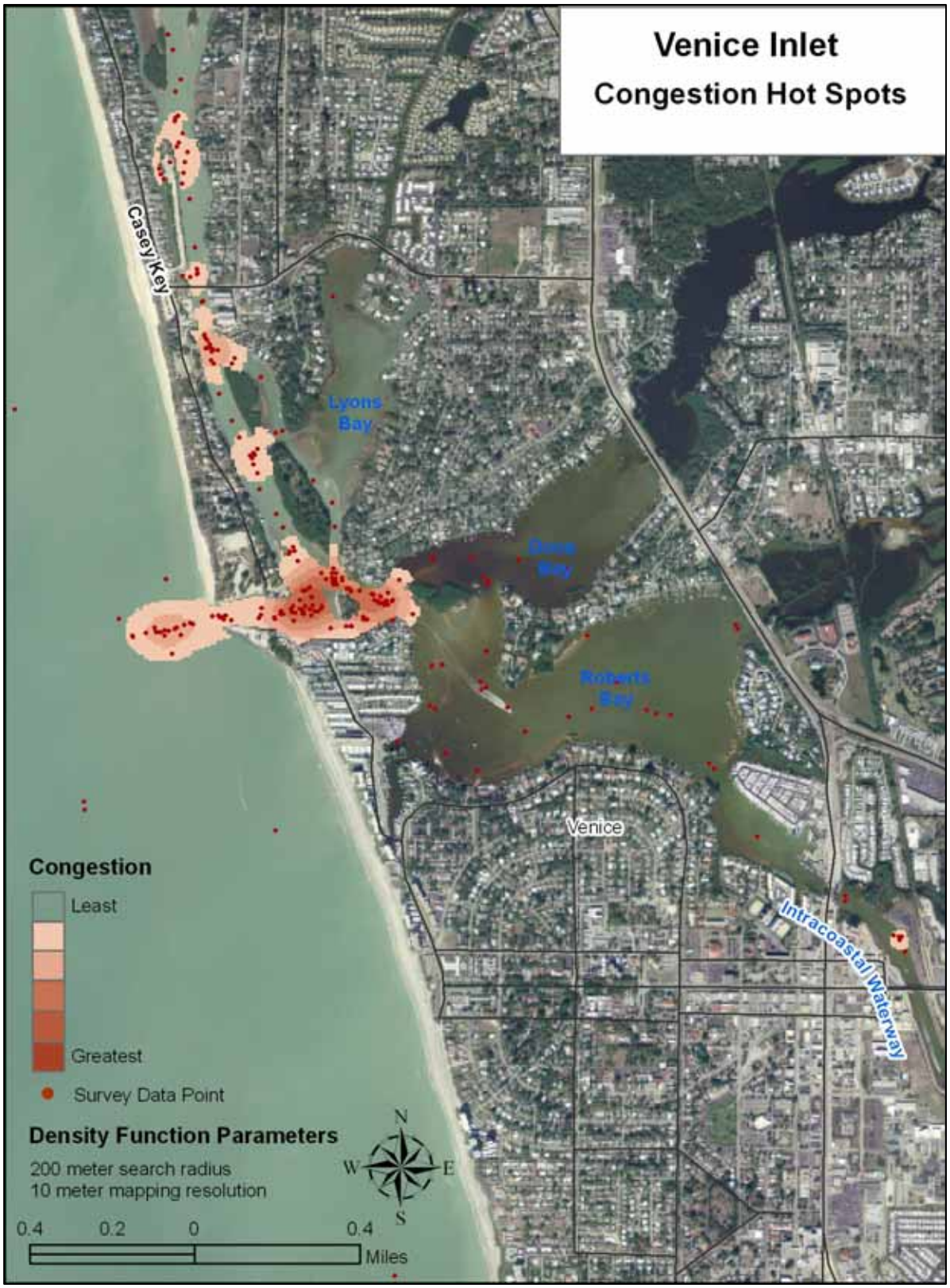

Figure 15. Venice Inlet: Congestion Hot Spots.

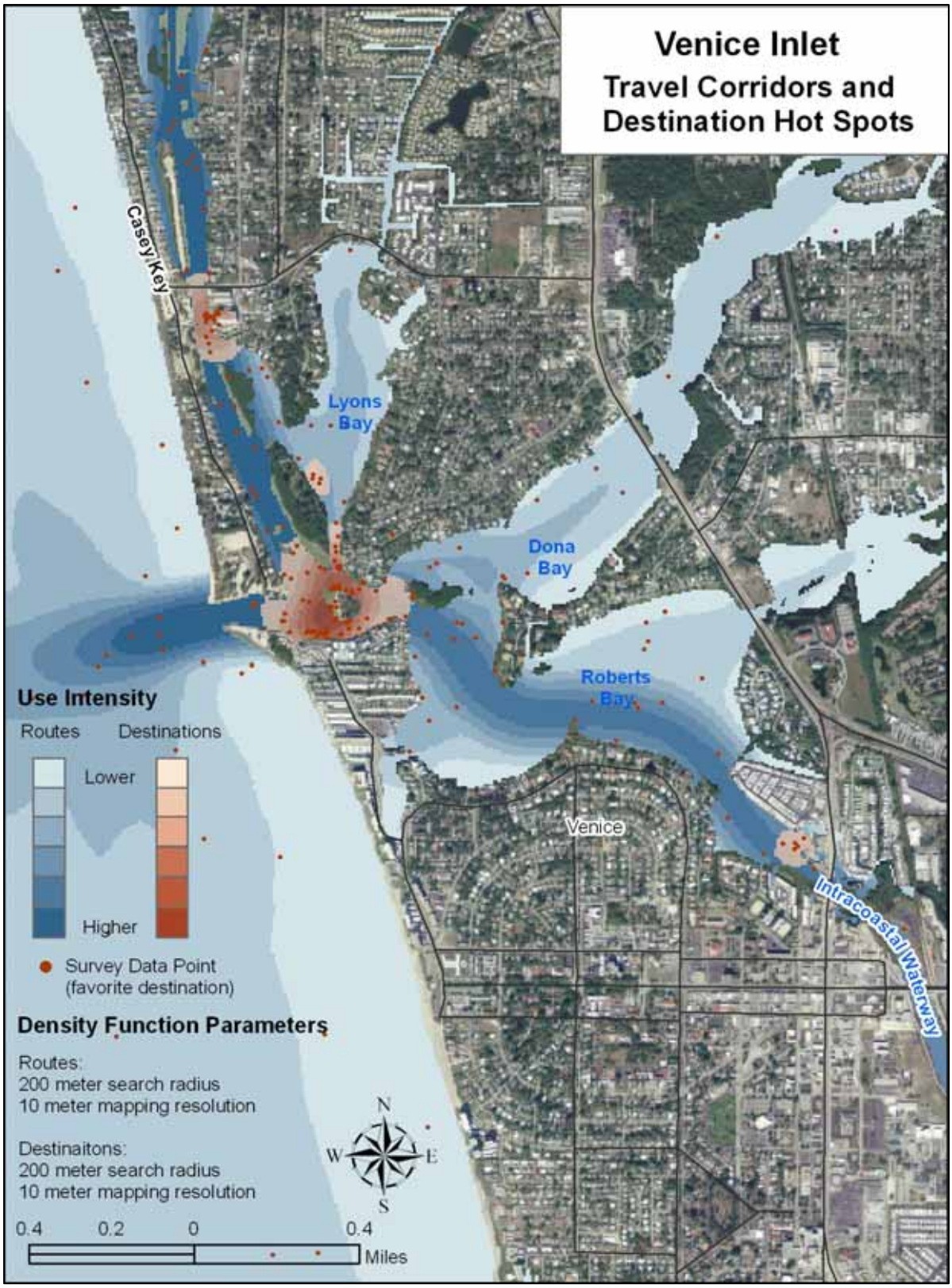

Figure 16. Venice Inlet: Travel Corridors and Destination Hot Spots.

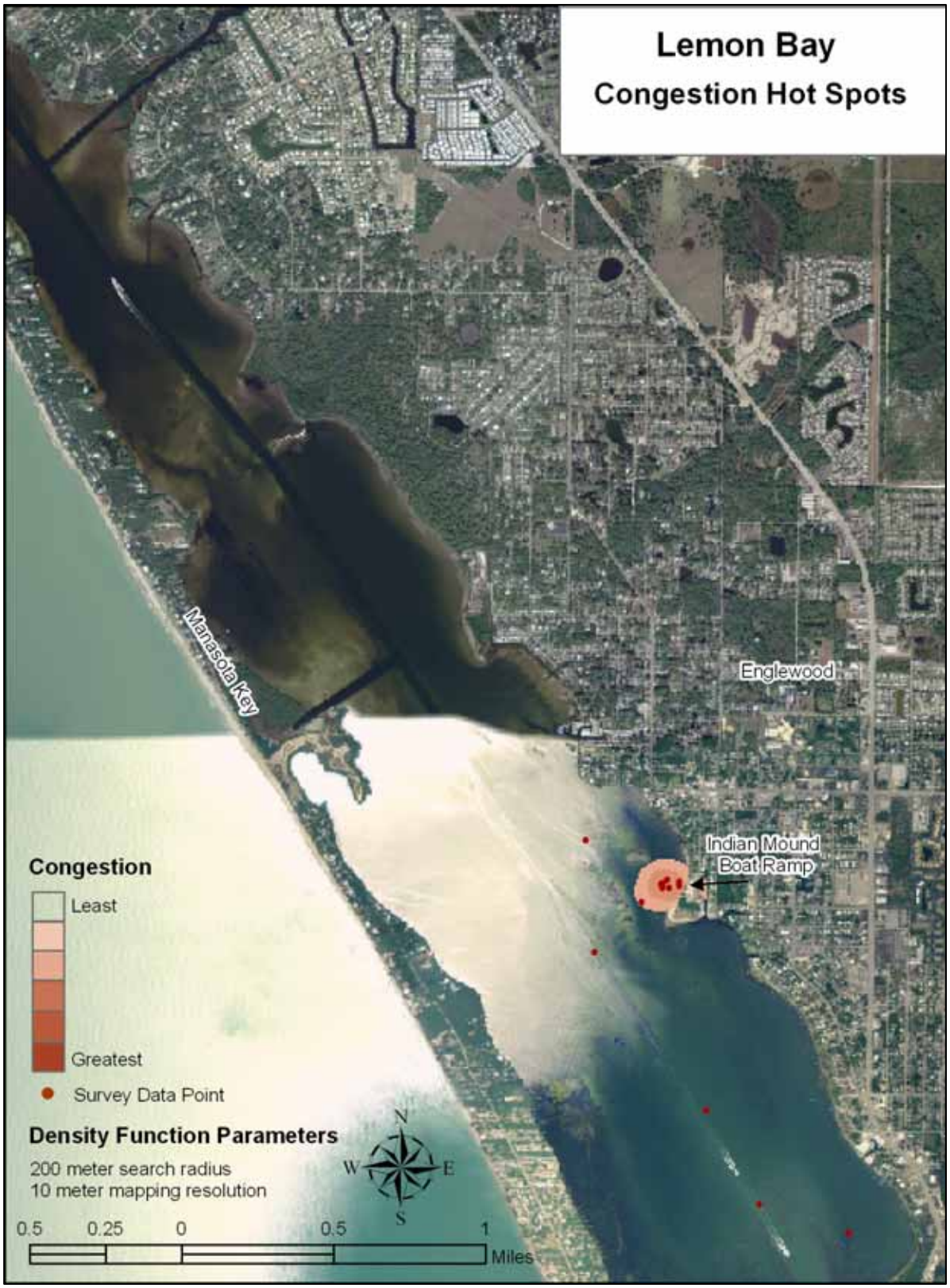

Figure 17. Lemon Bay: Congestion Hot Spots.

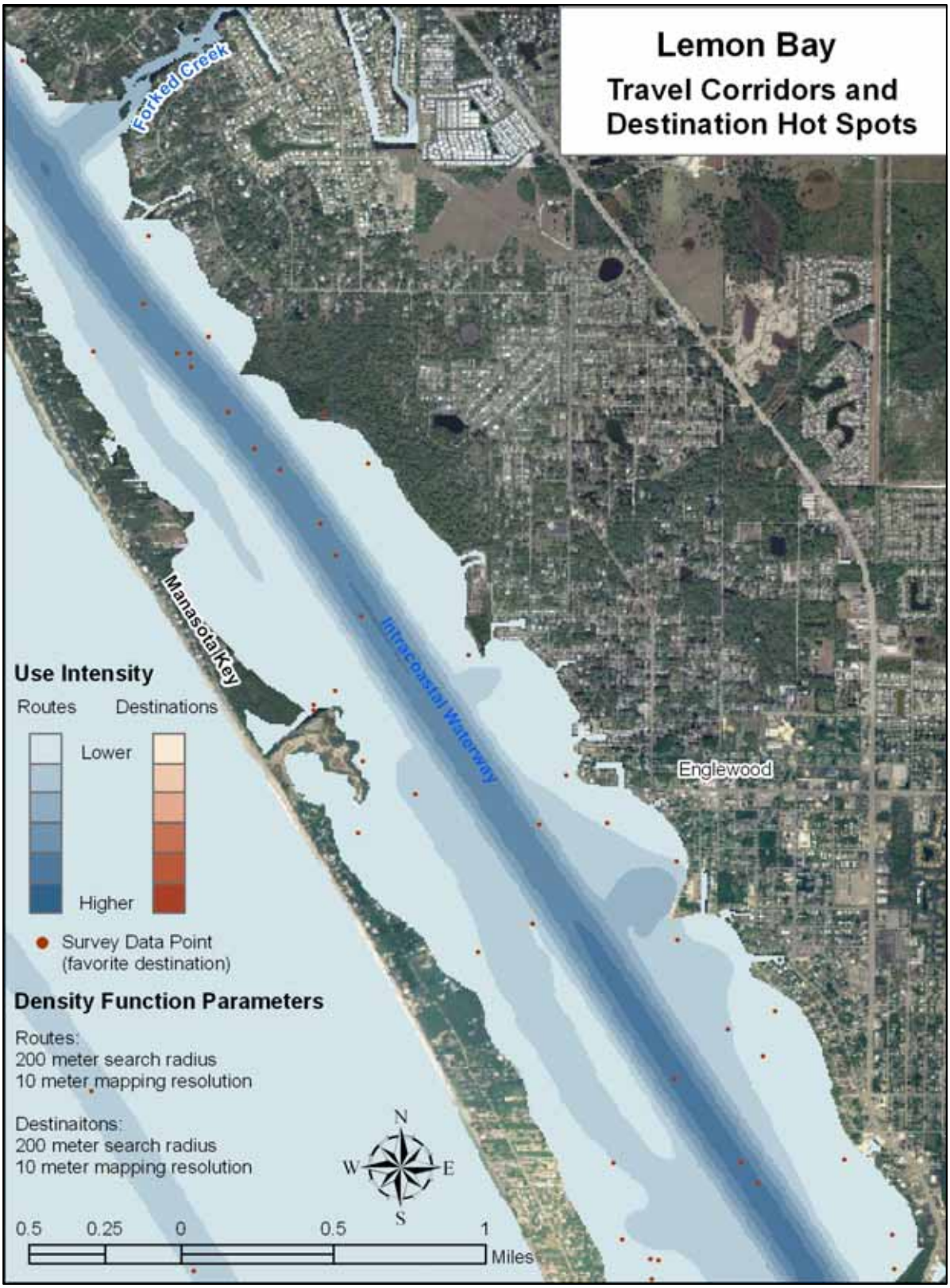

Figure 18. Lemon Bay: Travel Corridors and Destination Hot Spots.

Table 5 shows a breakdown of trip information according to prominent passes and bays utilized by Sarasota County boaters. Seventy three percent of the routes mapped by survey respondents traversed one of five prominent inlets in the study area. An evaluation of routes that were associated with inlets, as reported by survey respondents, indicates that Venice Inlet (32% of routes) and New Pass (30% of routes) experience the greatest relative volume of reported trips. These are followed by Big Sarasota Pass with 22% of routes. Stump Pass in Charlotte County and Longboat Pass in Manatee County (ranked fourth and fifth) are associated with 10% and 7% of trips originating from Sarasota County access facilities, respectively.

Table 5. Breakdown of Sarasota County Boaters' Trip Features Associated with Inlets and Bays.

Pass	**# of routes through inlets**	**% of routes through inlets**	**% of total routes**	**Relative Rank**
Longboat	93	7	5	5
New Pass	399	30	22	2
Big Sarasota Pass	290	22	16	3
Venice Inlet	424	32	23	1
Stump Pass	137	10	7	4
Total routes through inlets	1,343	100	73	
Total routes	1,832			
Bay	**# of destinations in bays**	**% of destinations in bays**	**% of total destinations**	**Relative Rank**
Sarasota Bay	824	53	36	1
Robert's Bay	130	8	6	5
Little Sarasota Bay	233	15	10	2
Blackburn Bay	55	4	2	6
Venice Inlet	141	9	6	4
Lemon Bay	180	12	8	3
Total destinations in bays	1,563	100	68	
Total destinations	2,291			
Bay	**# of congested spots in bays**	**% of congested spots in bays**	**% of total congested spots**	**Relative Rank**
Sarasota Bay	473	46	40	1
Robert's Bay	120	12	10	3
Little Sarasota Bay	113	11	9	4
Blackburn Bay	61	6	5	6
Venice Inlet	147	14	12	2
Lemon Bay	105	10	9	5
Total congested spots in bays	1,019	100	85	
Total congested spots	1,195			

A ranking of destination and congested locales by bay is also highlighted in Table 5. Baywater destinations account for 68% of the total number of favorite destinations mapped by survey respondents. The results show that Sarasota Bay (53% of destinations) is by far the most popular destination area within Sarasota County, followed distantly by Little Sarasota Bay (15% of destinations) and Lemon Bay (12% of destinations). Venice Inlet and Robert's Bay—ranked fourth and fifth, respectively—were associated with roughly 9 % of the destinations reported by Sarasota County boaters. Lastly, Blackburn Bay was connected with 4% of baywater destinations.

A relative ranking of baywater areas according to perceived congestion (Table 5) shows that Sarasota Bay (40% of baywater congested locales) is overwhelmingly considered to be the most congested area. It should be noted that the majority of congested spots in Sarasota Bay which were reported by boaters are confined to specific locations (e.g., New Pass, Big Sarasota Pass, Centennial Park boat ramp), as identified in Figure 11. Venice Inlet (14% of congested areas) and Robert's Bay (12% of congested areas) are ranked a distant second and third. Congestion in Robert's Bay is shown to be primarily associated with the Intracoastal Waterway (Figure 11). The Venice Inlet locale, by contrast, is characterized by a number of boat accessible restaurants, marinas, and the confluence of the inlet with several interior bays and the Intracoastal Waterway. Little Sarasota Bay and Lemon Bay are ranked fourth and fifth, respectively, with approximately 10% of the congested locales, followed, lastly, by Blackburn Bay with 6%.

Chapter 5. Boater-Group Characteristics

Overview

This chapter presents an evaluation and discussion of responses to specific survey questions. Chapter sections are divided according to themes that describe (1) vessel and boater profiles; (2) trips and seasonality; (3) rationale for selecting departure sites, destinations, and travel routes; (4) activities; and (5) perceived congestion. Although questions were arranged to follow a logical progression on the survey instrument the following results and discussion sections are arranged thematically; therefore, questions do not necessarily follow the order in which they appeared on the survey. The descriptive analysis presented in this chapter is based on 1,331 responses that represent a combination of (1) information obtained from the n=973 returned 2005 Sarasota County surveys, and (2) information obtained from the n=358 Sarasota County respondents to the 2003 Tampa and Sarasota Bay recreational boating characterization survey. A copy of the 2005 Sarasota County boater survey instrument is provided in Appendix A.

Vessel and Boater Profile

This section describes the types of vessels owned and used, and survey respondents' boating experience and knowledge of local waterways.

- The n=1,331 survey respondents accounted for a total of 1,461 vessels, of which 39.70% were Open Fisherman and 27.38% were Power Cruisers. These two vessel types accounted for more than two-thirds of boats owned by respondents (Table 6; Question 6).

Table 6. Vessel Type.

Vessel type	Frequency count (vessels)	Percentage of total vessels
Jet ski	44	3.01%
Kayak/Row/Canoe	50	3.42%
Sailboat (no cabin)	27	1.85%
Sailboat (with cabin)	76	5.20%
Speed Boat (jet boat, cigarette boat)	186	12.73%
Open Fisherman (flats, skiff, johnboat)	580	39.70%
Power Cruiser	400	27.38%
Pontoon/Deck Boat	84	5.75%
Other	14	0.96%
	1,461 vessels (n = 1,331 respondents)	

- Of the n=1,331 survey respondents, 38.47% accessed waterways from public boat ramps (the top-ranked waterway access category) and 37.71% departed from home docks (the second-highest ranked departure category). Together, marina wet slips and dry storage facilities accounted for about 21% of the departure sites identified by respondents (Table 7; Question 11). These ratios are consistent with those obtained from a statewide survey of boaters conducted by Swett et al. (2005) in which 43% departed from boat ramps; 35% departed from home docks; 12% from wet slips; and 6% from dry storage facilities. Note that shore/causeway and condominium dock waterway access categories are included (in addition to the four primary waterway access types) in the summary tables as some respondents selected these options when answering Question 11.

Table 7. Boater Waterway Access Categories.

Access Category	Frequency count	Percentage of total	Rank
Boat Ramp	512	38.47%	1
Shore/Causeway	3	0.22%	
Marina Wet Slip	135	10.14%	4
Dry Storage Facility	144	10.82%	3
Home Dock	502	37.71%	2
Condo Dock	35	2.63%	

n = 1,331 respondents

- The average number of months per year that survey respondents reside in the state of Florida is approximately 11.1 months with a 95% confidence interval that ranged from 10.96 to 11.22 months (Table 8; Question 21).

Table 8. Average Monthly Residence per year in the State of Florida.

n = 1,328 respondents out of a total of 1,331

Average number of months living in Florida = 11.094 months

Standard Deviation = 2.37 months
95% confidence interval: {10.96 to 11.22 months}

- On average, survey respondents had 16.47 years of recreational boating experience. The 95% confidence interval ranged from 15.76 to 17.17 years boating experience. The median number of years of boating experience, based on n=1,328 respondents, was 13 years (Table 9; Question 22).

Table 9. Boating Experience (in years).

Statistic	Years boating
Average	16.47
Standard. Deviation	13.15
Minimum	0
Maximum	68.00
Median	13.00
Mode	20.00
n = 1,328	

The 95% confidence interval for years boating experience: {15.76 years to 17.17 years}.

- Survey respondents who accessed waterways from home docks and public boat ramps tended to have the most boating experience in Florida, in each case exceeding the average of 16.47 years. Respondents departing from marina wet slips reported just over 15 years of boating experience, on average. The experience levels of respondents departing from dry storage facilities (12.4 years) and condo docks (12.8 years) tended to fall well below the average (Table 10; Question 22).

Table 10. Years of Boating Experience in Florida by Waterway Access Category.

		Boating Experience (in years)				
Access category	**n**	**Mean**	**Std. dev.**	**Median**	**Min**	**Max**
Boat Ramp	511	16.7*	12.7	15	0.3	60
Shoreline/Causeway	3**	17.0*	19.9	7	4.0	40
Marina Wet Slip	135	15.3	12.5	10	0.8	50
Dry Storage Facility	144	12.4	11.7	7.5	0.8	60
Home Dock	500	17.8*	14.0	15	0.0	68
Condo Dock	35	12.8	8.4	12	1.0	30

* Denotes above-average experience-- exceeds the mean (> 16.47 years).

****** Statistic is based on a very small sample size.

- Approximately 70% of n=1,327 respondents indicated that they have had a boater safety or seamanship course. Respondents that launched from boat ramps tended to be the least likely to have had a boater safety or seamanship course while those departing from marina wet slips were the most likely, with well over 90% reporting formal training in boating safety / seamanship. A higher-than-average number of respondents that accessed the water from dry storage facilities, home docks, and condo docks indicated that they had completed some form of boating safety/seamanship course or training (Table 11; Question 23).

Table 11. Boaters Having Completed a Boat Safety / Seamanship Course By Waterway Access Category.

Access Category	**n**	**Yes**	**Percentage**
Boat Ramp	509	294	57.76
Shoreline/Causeway	3	1	33.33**
Marina Wet Slip	135	123	91.11*
Dry-Storage Facility	144	113	78.45*
Home Dock	501	373	74.45*
Condo Dock	35	27	77.14*
Overall	1,327	931	70.15 (average)

* Denotes above-average value.
**Statistic is based on a very small sample.

- Survey respondents were 56 years of age, on average. Respondents who accessed waterways from marina wet slips, dry storage facilities, and home docks were between 2.7 and 4.7 years older than the average respondent. Survey respondents who accessed the water from condo docks tended to be approximately 10 years older than the average survey respondent. Survey respondents launching from boat ramps tended to be about 49 years of age (on average), and roughly seven years younger than the average survey respondent (Table 12; Question 24).

Table 12. Age of Boaters by Waterway Access Category.

		Age (in years)				
Access Category	**n**	**Average**	**Std. Dev.**	**Median**	**Min**	**Max**
Boat Ramp	511	49.0	10.9	48	16	89
Shoreline/Causeway**	3	63.0*	5.0	63	58	68
Marina Wet-Slip	134	60.5*	9.5	61	33	79
Dry Storage Facility	143	58.8*	10.4	59	32	86
Home Dock	499	60.8*	11.2	61	22	96
Condo Dock	33	66.0*	10.4	59	32	86
Overall	1,323	56.1	12.2	57	16	96

* Denotes above-average value.
** Statistics are based on a very small sample.

- Willingness to participate in a future Internet survey was highest for respondents that accessed Sarasota County waterways from marina dry storage facilities (76.9%) and marina wet slips (71.6%). The remaining waterway access groups fell at or below the average degree of willingness (67.3%) to participate in a future survey. Respondents that accessed the water from home (63.3%) and condo docks (64%) had the lowest willingness to participate (Table 13a; Question 25a).

Table 13a. Boater Willingness to Participate in a Future Internet Survey.

Access Category	**n**	**Yes**	**Percentage**
Boat Ramp	361	243	67.3%**
Shoreline/Causeway	2	2	100.0%***
Marina Wet Slip	113	81	71.6%*
Marina Dry Storage	117	90	76.9%*
Home Dock	409	259	63.3%
Condo Dock	25	16	64.0%
Overall	n = 1,027	691	67.3% (average)

* Denotes above-average value.
** Not significantly different from the average at 95% confidence.
*** Small sample size bias (not necessarily representative of group).

- Willingness to participate in a future mail survey was highest for boaters that launched from boat ramps (almost 93%), followed by respondents that departed from condo docks (with just over 90%). All other waterway access groups fell at or below the average willingness to participate figure of 88.7%. Respondents that departed from home docks had the lowest willingness to participate percentage with 83.4%. Nonetheless, willingness to participate in a future mail survey was very high across the board, with an average for all waterway access groups of over 88%—a figure that is significantly higher than the percentage of respondents willing to participate in the Internet-based survey (Table 13b; Question 25b).

Table 13b. Boater Willingness to Participate in a Future Mail Survey.

Access Category	n	Yes	Percentage
Boat Ramp	389	361	92.8%*
Shoreline/Causeway	3	3	100.0%***
Marina Wet Slip	64	55	85.9%
Dry Storage Facility	81	72	88.8%**
Home Dock	260	217	83.4%
Condo Dock	21	19	90.4%*
Overall	n = 818	727	88.7% (average)

* Denotes above-average value.
** Not significantly different from the average at 95% confidence.
*** Small sample size bias (not necessarily representative of group).

Trip and Seasonal Use Profiles

This section characterizes the trip and seasonal boating profiles of survey respondents.

- Survey respondents who departed from marinas traveled, on average, 39 minutes from home to their respective departure sites with a median travel time of 15 minutes (Table 14; Question 13).

Table 14. Drive Time from Home to Marina.

Statistic	Drive time (in minutes)
Average	39.3
Standard Deviation	121.6
95% confidence interval	{24.6 to 53.9 minutes)
Median	15.0
n = 265 respondents	

- Survey respondents who accessed Sarasota County waterways from boat ramps or causeway/shorelines tended to launch approximately 30 times per year, with a median value of 24 departures per year (Table 15; Question 14).

Table 15. Number of Times Per Year that Ramp or Causeway/Shoreline is Used to Launch a Boat.

Statistic	Number of times/year
Average	30.5
Standard Deviation	25.1
95% confidence interval	{28.0 to 32.9}
Minimum	1.0
Maximum	200.0
Median	24.0
n = 397 respondents	

- The average drive time for boaters who launched from a boat ramp or shoreline / causeway was approximately 28 minutes; with a median drive time of 20 minutes (Table 16; Question 15).

Table 16. Drive Time to Boat Ramp or Shoreline/Causeway (in minutes).

Statistic	Drive time (in minutes)
Average	28.3
Standard Deviation	32.0
95% confidence interval	{24.1 to 32.4}
Minimum	2.0
Maximum	210.0
Median	20.0
n = 225 respondents	

- Respondents who accessed waterways from home docks tended to have the earliest AM departure (6:20 AM, on average) followed by those who launched from boat ramps (7:37 AM, on average). Boaters who accessed waterways from condo docks tended to depart almost an hour later than those who launched from boat ramps during the AM hours (Table 17; Question 2).

Table 17. Departure Time Averages by Waterway Access Category.

		Average values for group	
Access Category	**n**	**AM time**	**PM time**
Boat Ramp	494	7:37	12:22
Shoreline/Causeway*	3	6:40	12:40
Marina Wet Storage	118	7:53	12:38
Dry Storage Facility	141	7:45	12:28
Home Dock	486	6:20	1:03
Condo Docks	34	8:31	12:21
All groups	1,276	7:11AM	12:41PM

* Results based on small sample (not necessarily representative of group).

- Survey respondents reported a total of 1,832 trips with an average trip duration of 5.23 hours (Question 3). For trips of 24 hours or less in duration, respondents who launched from boat ramps tended to log significantly more time on the water than did those who departed from other locations. Marina wet slip users were second in terms of time spent on the water, with an average trip duration of 5.24 hours (note: this value is not significantly different, at the 95% confidence level, from the mean trip duration of 5.23 hours). Condo dock users tended to spend significantly less time on the water than did those who departed from marina wet slips, dry storage facilities, or boat ramps (Table 18a; Question 3).

Table 18a. Trip Duration by Waterway Access Category for Day Trips (Combined Trips: Trip duration $\leq$ 24 hours – day trippers).

	Day trips (in hours)		
Access Category	**Mean**	**95% C.I.**	**Median**
Boat Ramp	6.08*	{5.9 to 6.2}	6.0
Shoreline/Causeway	3.25	{2.2 to 4.2}	3.5
Marina Wet Slip	5.24	{4.7 to 5.7}	5.0
Dry Storage Facility	5.02	{4.6 to 5.3}	4.3
Home Dock	4.54	{4.3 to 4.7}	4.0
Condo Dock	3.47	{2.9 to 4.5}	3.0
Overall	5.23	{5.1 to 5.3}	5.0

* Denotes above-average trip duration.

- The average duration for trips that exceeded 24 hours in length (yet were less than or equal to 60 days) was approximately 92 hours (or 3.8 days). The median long-term trip duration was 48 hours. Respondents who departed from marina wet slips and home docks tended to spend an above-average number of hours on the water (121.6 and 140.7 hours, respectively). Respondents who launched from ramps and accessed the waterways from marina dry storage facilities tended to have shorter overnight trip durations (Table 18b; Question 3).

Table 18b. Trip Duration by Waterway Access Category for Overnight Trips (Combined Trips: Trip duration > 24 hours < 60 days).

	Overnighters (in hours)		
Access Category	**Mean**	**95% C.I.**	**Median**
Boat Ramp	43.5	{37.5 to 49.5}	32
Shoreline/Causeway	-	-	-
Marina Wet Slip	121.6*	{81.4 to 161.9}	72
Dry Storage Facility	59.1	{38.2 to 80.0}	34
Home Dock	140.7*	{94.9 to 186.5}	60
Condo Dock	88.4	-	31
Overall	92.6	{75.0 to 110.3}	48

* Denotes above-average on-water travel time / trip duration.

- Survey responses suggest a year-round boating season in the Sarasota County study region, with a peak-use period running from April through July and an off-peak period from December through February. May is the peak-use month for survey respondents, with an average 4.56 trips per boater reported. January is the month with the lowest average number of reported boating trips, with approximately 2.81 trips per survey respondent (Tables 19a; Question 8).

Table 19a. Boat Trips: Monthly Averages (trips / boater / month).

Month	n	Monthly average	Top-4 rank	Trips	% of total
January	1,329	2.81		3,744	6.3
February	1,329	3.05		4,059	6.8
March**	1,329	3.77		5,016	8.4
April**	1,329	4.31*	3	5,736	9.6
May**	1,329	4.56*	1	6,067	10.1
June**	1,329	4.48*	2	5,953	10.0
July	1,329	4.23*	4	5,620	9.4
August	1,329	3.94*		5,241	8.8
September	1,329	3.76		5,004	8.4
October	1,329	3.75		4,993	8.3
November	1,329	3.39		4,508	7.5
December	1,329	2.88		3,826	6.4
				Total = 59,773 trips	

Overall Monthly Average of approx. 3.8 trips / boater / month

* Denotes months in which average number of trips exceed the overall monthly average of 3.8 trips / boater / month.

** Denotes peak months (top-4 ranked values, from monthly averages); shown in descending order (from high to low).

- On average, there were 17.60 boat trips per respondent during the peak-use boating period (which runs from April through July based on average monthly trip estimates from Question 8). Ramp users generated the greatest number of total trips (on average) during the peak-use period followed by home dock users. Boaters who accessed the water from marina wet slips and dry storage facilities generated a less than average number of boat trips during this period. Respondents who departed from condo docks tended to generate the least number of trips (approximately 14.79 trips on average) during the peak-use period (Table 19b; Question 8).

Table 19b. Boat Trips During Peak Season by Waterway Access Category.

		Trips/boater (April—July)			
Access Category	**n**	**Total**	**Average**	**Median**	**Rank***
Ramp	510	9,173	17.98**	15.0	1
Shoreline/Causeway***	3	16	5.33	4.0	
Marina Wet Slip	135	2,211	16.37	12.0	4
Dry Storage Facility	144	2,486	17.26	15.5	3
Home Dock	502	8,987	17.90**	15.0	2
Condo Dock	34	503	14.79	13.5	
Overall	n = 1,328	23,376	17.60	15.0	

*Based on average values.
** Denotes at or above the average value.
***Small sample size.

- Overall, survey respondents averaged about 45 boating trips per year, with a median of 36 trips. Boaters departing from home docks tended to generate the greatest number of boat trips per year (47.3). Dry storage facility, boat ramp, and marina wet slip users accounted for 44.9, 43.9, and 42.7 trips per year (on average), respectively. Condo dock users generated the fewest number of trips per year, with an average of approximately 38 trips (Table 19c; Question 8).

Table 19c. Yearly Boat Trip Statistics by Departure Category.

		Trips/Boater (Year)			
Access Category	**n**	**Total**	**Average**	**Median**	**Rank***
Boat Ramp	510	22,389	43.9	35	3
Shoreline/Causeway***	3	54	18.0	8	
Marina Wet Slip	135	5,768	42.7	35	4
Dry Storage Facility	144	6,474	44.9	39	2
Home Dock	502	23,760	47.3**	37	1
Condo Dock	35	1,328	37.9	30	5
Overall	n = 1,329	59,773	44.9	36	

* Based on average values;
** Denotes an above-average value.
*** Small sample size (results not necessarily representative of group).

- Trip-day information obtained from survey respondents was used to compare the number of weekday versus weekend trips by waterway access category. Of the 1,886 total reported trips, 55.30% were taken on a weekend (Saturday/Sunday) and 44.69% on a weekday (Monday through Friday). Two-thirds of boat trips that initiated from ramps tended to occur on the weekend (61.72% of trips on a weekend and 38.27% on a weekday). By contrast, a large majority of trips made by survey respondents who departed from marina wet slips or condo docks tended to fall on weekdays. Trips associated with survey respondents who accessed the water from dry storage facilities or home docks tended to be fairly evenly split between weekdays and weekend (Table 19d; Question 4).

Table 19d. Boater Trip Days: Weekday versus Weekend Trips.

Access Category	Weekday trips	%	Weekend trips	%	Total trips
Boat Ramp	333	38.27	537	61.72	870
Shoreline/Causeway	3	50.00*	3	50.00*	6
Marina Wet Slip	108	56.25	84	43.75	192
Marina Dry Storage	69	48.59	73	51.40	142
Home Dock	311	48.29	333	51.70	644
Condo Dock	19	59.37*	13	40.62	32
Overall	843	44.69	1043	55.30	1,886

* Small sample size (not necessarily representative of group).

Rationale for Selecting Departure Sites and Travel Routes

This section characterizes the rationale for selecting departure sites (e.g., marina, ramp, dock), and travel routes.

- The top five reasons cited by survey respondents for selecting a departure site were if it (1) had adequate parking (top-ranked response); (2) facilitated easy boat launch and retrieval; (3) had safe and secure parking; (4) had a short wait to launch; and (5) was proximate to favorite boating spots/destinations (Table 20; Question 16). Note that *lower* average numerical score indicates *greater* importance.

Table 20. Reasons for Selecting a Favorite Departure/Launch Site.

	Reason/Description	**Response***		
		Count (n)	**Average**	**Rank****
1	Deep-water access	796	2.25	9
2	Availability of restrooms	783	2.58	10
3	No parking / launch fee	768	1.91	8
4	Well-marked access channels	801	1.89	7
5	Proximity to favorite boating spots	793	1.84	5
6	Adequate parking	804	1.48	1
7	Availability of fishing supplies	773	2.82	11
8	Short wait to launch	776	1.78	4
9	Gas, pump-out, maintenance service	790	2.89	12
10	Nearby amenities (e.g. restaurants)	779	2.97	13
11	Proximity to home	813	1.86	6
12	Ease of launching/retrieving boat	783	1.57	2
13	Safe and secure parking	796	1.60	3
14	Other reason: mixed/comments	111	-	-

Note: Count (n) is out of 1,331 total survey respondents to question 16;

* Average response based on Key below;
** Ranking: from "most important" to "least important" (reasons 1-13 only)

Key:
1 –Strongly agree **(**very important)
2 – Agree (important)
3 – Neutral
4 – Disagree (somewhat unimportant)
5 – Strongly disagree (very unimportant)

- The top five reasons for selecting a favorite travel route included (a) to enjoy scenic beauty (top-ranked response); (b) to avoid congested areas; (c) well marked channels; (d) quick access to favorite boating spots; and (e) avoidance of shallow water (Table 21; Question 9).

Table 21. Reasons for Selecting a Favorite Travel Route.

Reason/Description	Response*		
	Count (n)	Average	Rank**
1 Avoid congested areas	1,303	1.76	2
2 Avoid shallow water	1,299	2.08	5
3 Good fishing	924	2.40	7
4 Prefer well-marked channels	1,301	1.77	3
5 Prefer calm protected waters	1,293	2.21	6
6 Avoid speed	1,281	2.64	8
7 None are important – just cruise around	1,179	3.55	10
8 Easy access to supplies or fuel	1,266	2.74	9
9 Quick access to favorite boating spots	1,269	2.00	4
10 Enjoy scenic beauty	1,292	1.60	1
11 Other reason	189	-	-

Note: Count(n) is out of 1,331 total survey respondents.

* Average response based on Key below;
** Ranking: from "most important" to "least important" (reasons 1-13 only)

Key:
1 – Strongly agree (very important)
2 – Agree (important)
3 – Neutral
4 – Disagree (somewhat unimportant)
5 – Strongly disagree (very unimportant)

Boater Activity Profile

This section presents a summary of recreational boating activities reported by survey respondents. The results are based on answers to Question 18 and reflect a ranking of chosen activities. Respondents were asked to choose, from an activity list, ***all*** of the activities in which they engage on a typical pleasure boating trip. 'Count' is, therefore, equal to the total number of times a given activity was chosen. [Note: Since many respondents selected multiple activities from the list, the column of percentages will sum to more than 100%.] The top six activities (by rank) are identified in each table.

- Restaurant visits and fishing ranked as the leading activities, with well over half of survey respondents marking these two categories as their primary activities during a typical boating trip. Cruising was the third-most popular activity (47%) followed by sightseeing and nature viewing (each accounting for about 46% of survey respondents). Socializing ranked sixth, an activity that was identified by roughly 45% of the boaters who responded to the survey (Table 22; Question 18).

Table 22. Boaters' Activity Statistics (entire sample).

Activity	Count (n)	Percentage of respondents	Rank
Beach Picnicking	478	35.93%	
Nature Viewing	615	46.20%	5
Sightseeing	616	46.28%	4
Cruising	630	47.33%	3
Daytime Anchoring	366	27.49%	
Socializing	605	45.45%	6
Diving	381	28.62%	
Overnight Anchoring	149	11.9%	
Visit Restaurants	715	53.71%	1
Fishing	714	53.64%	2
Sailing	110	8.26%	
Swimming	550	41.32%	
Skiing/Water-sports	378	28.39%	
Other	64	4.80%	

* Note: Count (n) reflects the number of respondents that marked a given activity out of the sample of n=1,331 respondents.

- Fishing ranked as the leading activity among survey respondents who launched from boat ramps, with 73% acknowledging that they fished during a typical boating trip. Swimming, cruising, nature viewing, and restaurant visits rounded out the top five responses. Beach picnicking and sightseeing were tied for 6th place. The top six activities were chosen by at least 41% of all survey respondents as activities in which they engaged during a typical boating trip. Sailing and overnight anchoring ranked lowest on the list, each accounting for less than 10% of activities reported by respondents who departed from boat ramps (Table 23a; Question 18).

Table 23a. Boaters' Activity Statistics: Boat Ramp Group**.**

Activity	Count (n)	Percentage of respondents	Rank
Beach Picnicking	213	41.35%	6 (tie)
Nature Viewing	224	43.49%	4
Sightseeing	213	41.35%	6 (tie)
Cruising	243	47.18%	3
Daytime Anchoring	123	23.88%	
Socializing	197	38.25%	
Diving	115	22.33%	
Overnight Anchoring	34	6.60%	
Visit Restaurants	214	41.55%	5
Fishing	376	73.00%	1
Sailing	7	1.35%	
Swimming	268	52.03%	2
Skiing/Water-sports	137	26.60%	
Other	17	3.30%	

Results are based on the 515 respondents.

- Socializing was the number one activity for boaters who departed from marina wet slips, with over 57% indicating that they engaged in this activity during a typical boating trip. Restaurant visits and cruising (52.59% and 48.14% of respondents, respectively) also were top responses. Sightseeing and nature viewing came in fourth and fifth place (accounting for 46.66% and 40% of respondents, respectively). Diving was sixth on the list with a respectable 37.77%. Only 17.03% of survey respondents engaged in skiing / water-sports—the least likely activity of boaters accessing the water from marina wet slips (Table 23b; Question 18).

Table 23b. Boaters' Activity Statistics: Marina Wet Slip Group**.**

Activity	Count	Percentage of respondents	Rank
Beach Picnicking	19	14.07%	
Nature Viewing	54	40.00%	5
Sightseeing	63	46.66%	4
Cruising	65	48.14%	3
Daytime Anchoring	45	33.33%	
Socializing	77	57.03%	1
Diving	51	37.77%	6
Overnight Anchoring	44	32.59%	
Visit Restaurants	71	52.59%	2
Fishing	32	23.70%	
Sailing	38	28.14%	
Swimming	35	25.92%	
Skiing/Water-sports	23	17.03%	
Other	9	6.66%	

Results are based on n = 135 respondents

- Visiting restaurants was the top-ranked activity among survey respondents who departed from dry-storage facilities, with a 64.58% response rate; followed by cruising (51.38%), sightseeing (47.91%), socializing (46.52%), fishing (45.83%), and nature viewing (44.44%). Swimming deserved an honorable mention, as it was an activity identified by well over one-third of the respondents. Less than 10% of respondents who departed from dry-storage facilities identified sailing or overnight anchoring as typical activities (Table 23c; Question 18).

Table 23c. Boaters' Activity Statistics: Marina Dry Storage Group.

Activity	Count	Percentage of respondents	Rank
Beach Picnicking	43	29.86%	
Nature Viewing	64	44.44%	6
Sightseeing	69	47.91%	3
Cruising	74	51.38%	2
Daytime Anchoring	39	27.08%	
Socializing	67	46.52%	4
Diving	34	23.61%	
Overnight Anchoring	3	2.08%	
Visit Restaurants	93	64.58%	1
Fishing	66	45.83%	5
Sailing	4	2.77%	
Swimming	55	38.19%	
Skiing/Water-sports	39	27.08%	
Other	2	1.38%	

Results are based on n = 144 respondents

- Visiting restaurants was the top ranked activity for boaters who accessed Sarasota County waterways from home docks; over 60% of respondents acknowledged that they engaged in this activity while on a typical boating excursion. Other top activities included nature viewing (51.19%), socializing (50%), sightseeing (49.60%), cruising (45.21%), and fishing (44.62%). Over one-third of home dock users engaged in swimming, beach picnicking, skiing / water-sports, and diving. The least likely activities of home dock users included sailing and overnight anchoring (Table 23d; Question 18).

Table 23d. Boaters' Activity Statistics: Home Dock Group.

Activity	Count	Percentage of respondents	Rank
Beach Picnicking	195	38.84%	
Nature Viewing	257	51.19%	2
Sightseeing	249	49.60%	4
Cruising	227	45.21%	5
Daytime Anchoring	150	29.88%	
Socializing	251	50.00%	3
Diving	175	34.86%	
Overnight Anchoring	62	12.35%	
Visit Restaurants	315	62.74%	1
Fishing	224	44.62%	6
Sailing	56	11.15%	
Swimming	185	36.85%	
Skiing/Water-sports	174	34.66%	
Other	35	6.9%	

Results are based on n = 502 respondents

- Restaurant visits and sightseeing were the leading activities among respondents who departed from condo docks, almost two-thirds (62.85%) reported that they engaged in these activities during a typical boating trip. Other prominent activities included cruising (60%), nature viewing (45.71%), fishing (45.71%), and socializing (37.14%). The least likely activities were sailing, skiing / water-sports, diving, and overnight anchoring; each accounted for less than 18% of the activities engaged in by condo dock users (Table 23e; Question 18).

Table 23e. Boaters' Activity Statistics: Condo Dock Group.

Activity	Count	Percentage of respondents	Rank
Beach Picnicking	8	22.85%	
Nature Viewing	16	45.71%	4.5
Sightseeing	22	62.85%	2
Cruising	21	60.00%	3
Daytime Anchoring	9	25.71%	
Socializing	13	37.14%	6
Diving	6	17.14%	
Overnight Anchoring	6	17.14%	
Visit Restaurants	22	62.85%	1
Fishing	16	45.71%	4.5
Sailing	5	14.28%	
Swimming	7	20.00%	
Skiing/Water-sports	5	14.28%	
Other	1	2.85%	

Results are based on n = 35 respondents (small sample)

Perceived Congestion

The summary of perceived congestion is based on responses to Questions 19, which defined congestion as the presence of "too many other boaters."

- Approximately 43% of survey respondents answered, "yes" to Question 19 indicating that they had avoided or left congested areas while boating. The boat ramp user group reported the highest percentage of perceived congestion, with over 51% answering "Yes" to Question 19. Survey respondents that departed from home docks were a distant second with 42.71% acknowledging the presence of "too many boaters" (Table 24; Questions 19 = Yes).

Table 24. Analysis of Congestion: Proportion of Survey Respondents that Indicated they had avoided or left their Favorite Spots/Destinations Due to Congestion.

Access Category	n	Answered "Yes" to Q19	Percentage	Rank
Boat Ramp	502	260	51.79%*	1
Shoreline/Causeway	3	0	0.00%	
Marina Wet Slip	129	32	24.80%	5
Dry Storage Facility	141	51	36.17%	4
Home Dock	494	211	42.71%	2
Condo Dock	33	12	36.36%	3
Overall	1,302	566	43.47%	

* Denotes above-average value.

Chapter 6. Perceived Detractors and Needs

Overview

This chapter summarizes the responses to the following survey questions:

> **Question 26.** "What detracts most from your boating experience?"
>
> **Question 27.** "What is needed most to improve your boating experience?"

A content analysis of the responses to each of the two questions yielded a typology of principal detractors (problems) and principal needs (solutions). Responses with shared general themes were grouped into primary categories, with more focused sub-categories identified where possible. The analysis was based on (1) information from n=973 returned surveys and (2) information obtained from the n=358 Sarasota County respondents to the 2003 Tampa and Sarasota Bay recreational boating characterization survey. Some responses were excluded from this analysis as not being amenable to planning or management intervention (e.g., responses to Question 26 such as "work," "weather," or cleaning the boat" or to Question 27 such as "a bigger boat," or "new engines"). In this chapter, "total responses" therefore refers to total analyzed responses. Note that some respondents listed multiple detractors and needs so the number of responses to these questions is greater than the number of surveys received. The results of the content analysis are presented in aggregate (all four access categories were grouped as one) with rankings based on the percentage received for each principal detractor or need. Though some groups were comparatively over-represented (ramp and dock users) or under-represented (marina wet slip and dry storage users) in terms of the number of surveys received, the response rates for the access groups garnered for this study are close to the ratios obtained in a 2005 statewide survey of boaters (Swett et al., 2005). As such, the results of the content analysis likely reflect the ranking of concerns of all boaters (all access types aggregated) in proportion to each group's "place" in Florida's boating population.

Detractors

Table 25 lists the primary categories of boating experience detractors. The leading category, with more than twice as many responses as the runner-up category and with more than one-third (37.3%) of the n=1,620 total responses, addressed a perceived **lack of courtesy and/or seamanship** in other boaters such as failure to observe safe, considerate, or regulated boating practices through disregard or ignorance). Responses citing **congestion**, either in the water or at ramps, made up the second-leading detractor category, with 15.0% of the total responses. Close behind were **infrastructure deficiencies** that emphasized quality issues (14.0% of the total). **Altered environment** detractors (10.9% of the total), especially red tide, and **excessive regulation** (10.6% of total responses) with a focus on manatee, speed, and no-wake zones ranked fourth and fifth, respectively. Ranking sixth and comprising the final significant detractor group were **water access** concerns regarding primarily a lack of boat ramps and ramp parking (9.8% of the total). Only a combined 2.4% of the total indicated either that **too little regulation** was a principal detractor or that **no detractors** figured in their boating experience. (Note: "No detractors" was specifically stated, not inferred from a lack of response.)

Table 25. Boating Detractors by Primary Category.

Primary Detractor Category	Total Number of Responses*	Percent of Total	Rank
Lack of Courtesy and/or Seamanship	603	37.3	1
Congestion	243	15.0	2
Infrastructure Deficiencies	227	14.0	3
Altered Environment	177	10.9	4
Excessive Regulation	172	10.6	5
Lack of Water Access	159	9.8	6
No Detractors	26	1.6	7
Lack of Regulation / Enforcement	13	0.8	8
TOTALS	1,620	100	

*The summed "Total Number of Responses" does not equal the number of surveys returned because many survey respondents chose not to answer this question, and even more identified multiple detractors in response to this question.

Lack of Courtesy and/or Seamanship in other boaters, the leading detractor category, encompassed all perceptions of bad boating behavior, whether applied to bad boaters in general or to specific user groups. These sub-categories are listed in Table 26. Perceptions ranged from reckless or inconsiderate practices (e.g., speeding too near other vessels or slowness in boat launching and retrieval), to inexperience (e.g., weekend rentals), to noncompliance with established laws and precedents (e.g., ignoring no wake zones on the ICW). "**Bad boaters in general"** made up 38.7% of the responses in this category and comprise the leading sub-category when all detractor types are considered, with 14.4% of the total response number. Unsafe operators of **PWCs** (20.6% of category), large boats generating **large wakes** in proximity to smaller craft (15.8% of category), and **speeding powerboats** (11.6% of category) were cited independently in significant numbers. A lack of courtesy and/or launching/retrieval ability on the part of **ramp users** comprised 4.6% of this category and 1.7% of all detractors cited. Additional sub-categories with less than 2% each of the total response number included aspects of boat **noise**, operator **alcohol use**, and inexperienced **rental** users.

Table 26. Lack of Courtesy and/or Seamanship Detractors by Sub-Category.

Primary Detractor/Sub-Category	Response Number	Percent of Category	Overall Percentage*
Lack of Courtesy and/or Seamanship	603	100.0	37.3
Bad Boaters in General	234	38.7	14.4
PWCs	124	20.6	7.7
Large Boat Wakes	95	15.8	5.9
Speeding Power Boats	70	11.6	4.3
Ramp Users	28	4.6	1.7
Noisy Power Boats	19	3.2	1.2
Drinking Boaters	17	2.8	1.1
Rentals	16	2.7	1.0

*Overall percentage refers to the percentage of all tallied responses to Question 26.

"Too many boaters" was the sentiment expressed in 15.0% of all responses to Question 26, making **congestion** the second leading category. Site-specific and time-specific aspects of **congestion** were noted and make up the sub-categories in Table 27. Approximately 75% of category responses were fairly evenly divided between congestion on the **waterways** and at **ramps,** with the resulting safety and access concerns. Ramp congestion was tied by many to the above-mentioned delays in launching and retrieving, and, in turn, to the display of impatient, angry behaviors. **Weekend and holiday** boat traffic was considered a principal detractor in 33 responses (13.6% of category), with a consequent avoidance of these times on the part of some. A much lesser number targeted specific **water areas** (9.1% of category), such as overcrowded fishing spots or water sport areas.

Table 27. Congestion Detractors by Sub-Category.

Primary Detractor / Sub-Category	Response Number	Percent of Category	Overall Percentage*
Congestion	243	100.0	15.0
On Waterways	104	42.7	6.4
At Ramps	84	34.6	5.2
Congestion (at specific areas)	22	9.1	1.4
On Weekends and Holidays	33	13.6	2.0

*Overall percentage refers to the percentage of all tallied responses to Question 26.

The third-leading detractor category dealt with **infrastructure deficiencies,** as itemized in Table 28. A disproportionate number of responses, accounting for about two-thirds (65.6%) of this category, addressed the failure to provide and maintain **dredging**, also stated as the failure to alleviate shoaling. Difficulty accessing the Gulf due to the lack of dredging of passes (specifically Big Sarasota Pass, New Pass, and Midnight Pass) accounted for 45 responses, or 30.2% of this sub-category. Shoaling in creeks (e.g., Phillippi), canals (e.g., Siesta Key), and bays was also cited. Smaller numbers (together, just 1.5% of total responses) addressed **channel mark** and **waterway sign** deficiencies, as being confusing, inadequate, or not current. Inadequate **public ramp** and **marina facilities** were deemed a leading detractor in 14 and 6 responses respectively. Ramp quality issues ranged from their being too steep or too shallow to their not providing amenities such as bathrooms, fresh water, or fish-cleaning stations. Similarly, though in smaller numbers, responses targeted marina facilities' lack of full service, such as fuel dock or pump-out station availability. Sub-categories involving deficient destination infrastructure were dominated by the lack of **waterfront restaurants** (9.3% of category and 1.3% of total), followed by the lack of designated **water sport areas** (4.0% of category).

Table 28. Infrastructure Deficiency Detractors by Sub-Category.

Primary Detractor / Sub-Category	Response Number	Percent of Category	Overall Percentage*
Infrastructure Deficiencies	227	100.0	14.0
Dredging	149	65.6	9.1
Waterfront Restaurants	21	9.3	1.3
Channel Marks	18	7.9	1.1
Ramp Facilities	14	6.2	0.9
Designated Water Sport Areas	9	4.0	0.6
Waterway Signs	7	3.1	0.4
Marina Facilities	6	2.6	0.4
Beaches, Artificial Reefs	3	1.3	0.2

*Overall percentage refers to the percentage of all tallied responses to Question 26.

Detractors focusing on **altered natural environment** constituted the fourth largest category, with 10.9% of all responses (Table 29). Perhaps because of outbreaks occurring during the study period, **red tide** was named the principal detractor in 6.4% of all responses, making it tied for the fourth highest sub-category overall. Other sources of **water pollution** including the presence of **trash** in the water subsumed the second highest number of responses in this category (26.5% of category and 2.9% of total). Loss of natural areas to **shore development** and a perceived **shortage of fish** populations together accounted for 26 responses, or 1.6% of the total overall.

Table 29. Altered Environment Detractors by Sub-Category.

Primary Detractor/Sub-Category	Response Number	Percent of Category	Overall Percentage*
Altered Environment	177	100.0	10.9
Red Tide	104	58.9	6.4
Water Trash/Pollution	47	26.5	2.9
Shore Development/Lack of Natural Areas	10	5.6	0.6
Lack of Fish	16	9.0	1.0

*Overall percentage refers to the percentage of all tallied responses to Question 26.

The fifth category of boating experience detractors dealt with perceptions of **excessive boating regulation** (Table 30). Of these, restraints imposed by manatee zones generated the largest response number (36.7% of category and 3.9% of total). Of similar nature were responses indicating excessive **no wake zones** (29.1% of category) and **speed zones** (27.3% of category) with cited concerns including excessive length, secondary congestion, and unreasonable time for Gulf access. These three boat speed regulatory concerns accounted for 93.1% of category responses and 10% of the total responses.

Table 30. Excessive Regulation Detractors by Sub-Category.

Primary Detractor/Sub-Category	Response Number	Percent of Category	Overall Percentage*
Excessive Regulation	172	100.0	10.6
Manatee Zones	63	36.7	3.9
No Wake Zones	50	29.1	3.1
Speed Zones	47	27.3	2.9
Patrol Harassment	6	3.5	0.4
Fishing Regulations	3	1.7	0.2
Boating Regulations	3	1.7	0.2

* Overall percentage refers to the percentage of all tallied responses to Question 26.

The sixth-leading detractor category dealt with aspects of compromised **water access** (Table 31). Paramount was the reported lack of **ramp parking**, accounting for 57.9% of all responses in this category and comprising the seventh highest sub-category overall (5.7% of total responses). Within this group, a significant number further defined the detraction as a lack of parking space for trucks with trailers. Full parking lots by a very early hour, tickets incurred for parking outside designated areas, and other limited access repercussions such as "sometimes the ramp parking lot is full *after* I put my boat in the water" were reiterated. Independent of parking, insufficient **ramp numbers** was the second leading access detraction (28.3% of category). By comparison, a shortage of **marinas/slips** was principal detractor in only 10 responses (6.3% of category), half of which specifically cited the loss of marinas to condominiums. Shortage of public **dock space** at marinas and popular waterfront restaurants and **dry storage** facilities completed the lack of access considerations. The lack of marinas and dry storage however is less likely to be a concern to those boaters who already have access to these facilities. As such, this category may represent a more important detractor especially to the large segment of the boating population in Florida not specifically targeted by the survey and who do not already keep their vessels in these limited and costly facilities.

Table 31. Lack of Water Access Detractors by Sub-Category.

Primary Detractor/Sub-Category	Response Number	Percent of Category	Overall Percentage*
Lack of Water Access	159	100.0	9.8
Ramp Parking	92	57.9	5.7
Ramps	45	28.3	2.8
Marinas/Slips	10	6.3	0.6
Dockage	8	5.0	0.5
Dry Storage	4	2.5	0.2

*Overall percentage refers to the percentage of all tallied responses to Question 26.

Responses addressing a perceived **lack of regulation or enforcement** as a detractor were few in number (13 responses, or 0.8% of total) and fragmented into the several minor sub-categories given in Table 32. The six responses weighing in for too little boat speed management

(i.e., via **speed zones** or **manatee zones**) comprised only 0.4% of the total responses. Given the substantial detractor subcategories of speeding powerboats and large boat wakes (see Table 33) it would appear that this aspect of boating was more readily seen in terms of a *need* for more patrols and regulation/enforcement of existing zones and regulations (as articulated in Question 27).

Table 32. Lack of Regulation/Enforcement Detractors by Sub-Category.

Primary Detractor/Sub-Category	Response Number	Percent of Category	Overall Percentage*
Lack of Regulation / Enforcement	13	100.0	0.8
Speed Zones (no wake)	4	30.8	0.3
Crab Trap Proliferation	3	23.0	0.2
Manatee Protection	2	15.4	0.1
Ramp Parking for Trailers Only	2	15.4	0.1
Fishing Regulations / Catch Limits	2	15.4	0.1

* Overall percentage refers to the percentage of all tallied responses to Question 26.

The leading 10 detractor sub-categories accounted for 1,119 (or 70%) of the n = 1,620 total analyzed responses to question 26 (Table 33). A significant majority (14.4% of total responses) cited a **lack of courtesy and/or seamanship** on the part of "other boaters in general" as the greatest detraction from their boating experience. When unsafe operators of **PWCs** (ranked third)**, large wake generators** (ranked sixth), and **speeding powerboats** (ranked ninth) are included in the "other boater behavior" consideration, the group expands to almost one-third (32.3%) of total responses. The perceived infrastructure failure of **maintenance dredging** particularly of Big Sarasota Pass, Midnight Pass, and New Pass ranked second with 9.2% of total responses. Tying with **waterway congestion** for fourth place was the environmental effect of **red tide**. The lack of **ramp parking**, negatively impacting water access, ranked seventh. The imposition of "too many" and "ill-conceived" manatee zones completes the 10 leading detractor sub-categories.

Table 33. Top-10 Detractors by Sub-Category.

Detractor Sub-Category	Response Number	Overall Percentage	Rank
General lack of courtesy/seamanship	234	14.4	1
Lack of Dredging (particularly the passes)	149	9.2	2
PWCs	124	7.7	3
Red Tide	104	6.4	4 (tie)
Waterway Congestion	104	6.4	4 (tie)
Large Boat Wakes	95	5.9	6
Lack of Ramp Parking	92	5.7	7
Ramp Congestion	84	5.2	8
Speeding Powerboats	70	4.3	9
Manatee Zones	63	3.9	10

Needs

Analysis of responses to Question 27 suggested seven primary categories, as listed in Table 34. Some responses addressing solutions to problems (needs) had themes mirroring those of the problems themselves (detractors). There were 112 fewer responses to Question 27 than to Question 26, and the areas of emphasis shifted in hierarchy somewhat. Many responders took advantage of Question 27 to address boating concerns other than those stated in their previously given detractors. It also appeared that certain detractors (e.g., boater lack of courtesy and/or seamanship) did not suggest corrective measures as readily as others (e.g., shoaling). For example, even if "more regulation enforcement" and "boater education/information categories" are combined, the total response number does not make up a "needs" preponderance comparable to the "bad boater behavior" detractor category.

The leading response category to Question 27, with 34.5% of the total responses (n = 1,508), was the need for **infrastructure improvement**. Many facets were addressed, from those ensuring safe passage to those providing for destination entertainment. Needs categorized under **increased access** ranked second (21.5% of total), followed by **more regulation/enforcement** (17.2% of total) of boat operation on the water and at ramps. In descending order, the next three categories, each garnering similar numbers of responses, were aspects of **boater education, environmental protection**, and the desire for **less regulation** (e.g., speed constraints). Finally, those responses indicating "**no needs**" comprised the seventh and smallest category, with 3.6% of the total.

Table 34. Boating Needs by Primary Category.

Primary Needs Category	Total Number Responses	Percent of Total	Rank
Infrastructure Improvement	521	34.5	1
Increased Access	324	21.5	2
More Regulation / Enforcement	259	17.2	3
Boater Education / Information	129	8.6	4
Environmental Protection	114	7.6	5
Less Regulation	106	7.0	6
No Needs	55	3.6	7
TOTALS	1,508	100	

The Infrastructure Improvement category (Table 35) was dominated by expressions of the need for **dredging** (43.6% of category and 15.1% of the total responses); this sub-category was dominated in turn by 90 responses (39.0% of dredging needs) of "open Midnight Pass." Desired dredging of New Pass and Big Sarasota Pass accounted for additional 19 and 39 responses respectively, and 39 responses simply stated "open the passes to the Gulf," such that 81.9% of dredging needs related to the Gulf passes. Improved **channel marks** constituted the second highest sub-category (17.9% of category). The need for improved **ramp facilities** (10.2% of category) encompassed many aspects, ranging from larger size and greater dock space to amenities such as freshwater rinse areas and bathrooms. The need for infrastructure to

accommodate boating activities collectively subsumed 23.6% of the category. In descending order, **waterside restaurants** garnered 9.4% of category, **artificial reefs** accounted for 6.3%, **beaches and picnic areas and parks** 4.6% of category, and **water sport areas** 3.3%. Finally, needs for improved **signage**, particularly as to hazard alerts, and for **full service marinas** (e.g., to accommodate haul-outs and heavy maintenance) completed the category, with less than 2.5% each of the total response number.

Table 35. Infrastructure Improvement Needs by Sub-Category.

Primary Need/Sub-Category	Response Number	Percent of Category	Overall Percentage*
Infrastructure Improvement	521	100.0	34.5
Channel and Pass Dredging	227	43.6	15.1
Channel Marks	93	17.9	6.2
Ramp Facilities	53	10.2	3.5
Waterside Restaurants	49	9.4	3.2
Artificial Reefs	33	6.3	2.2
Beaches, Picnic Areas, Parks	24	4.6	1.6
Designated Water Sport Areas	17	3.3	1.1
Full Service Marinas	13	2.4	0.8
Waterway Signs	12	2.3	0.8

* Overall percentage refers to the percentage of all responses tallied from Question 27.

The second highest category, addressing water access needs, was primarily about the need for **ramps and ramp parking** (Table 36). With 75.6% of the category responses and 21.5% of the total responses, this was the leading sub-category overall. Whereas ramps and ramp parking were considered separately in the detractor analysis, they were more often linked in responses to Question 27 and so were made a single sub-category. Specific places cited as needing greater ramp access included the east-side of Sarasota Bay, “in town” Sarasota, and City Island (Bayfront Park). The need for more **marinas and slips** was a distant second with 11.1% of category, followed by more **public dockage** access with 8.0%. Water access via **anchorages and public moorings** was cited as a principal need in nine responses and **dry storage facilities** in eight, together comprising 5.3% of this category. Again, the need for more slips and dry storage is likely less of an issue to those boaters targeted by the survey that already have access to these facilities.

Table 36. Increased Access Needs by Sub-Category.

Primary Need/Sub-Category	Response Number	Percent of Category	Overall Percentage*
Increased Access	324	100.0	21.5
Ramps and Ramp Parking	245	75.6	16.2
Marinas/Slips	36	11.1	2.4
Public and Transient Dockage	26	8.0	1.8
Anchorages and Public Moorings	9	2.8	0.6
Dry Storage Facilities	8	2.5	0.5

* Overall percentage refers to the percentage of all responses tallied from Question 27

Expressions of need for more boating regulation or better enforcement of existing regulations comprised the third highest category, with multiple fairly equally weighted sub-categories (Table 37). A greater **patrol presence** was desired both on the water (18.1% of category) and as a newly instituted service at ramps (9.7% of category). The latter 25 responses, with several targeting 10th Street ramp, called for an official (patrol or dock master) to direct the launch and retrieval traffic in order to maintain order and stop disputes. Specific suggestions were made for numbering systems or "delay fines" to regulate traffic flow particularly during peak periods. The need for mandatory boat **operator licensure** accounted for 12.0% of category responses. Speed control effected through better enforcement of **speed zones** or **no wake zones** was a principal need in 56 responses, or just over 21% of the category. More regulations governing **PWC** operation accounted for 15.1% of the category and better enforcement of **boating regulations in general** comprised 13.9% of category (2.4% of total responses). Finally, greater management directed at **waterway congestion**, **boating under the influence,** and the proliferation of **crab traps** near channels made up the remaining 25 responses in this category.

Table 37. More Regulation/Enforcement Needs by Sub-Category.

Primary Need/Sub-Category	Response Number	Percent of Category	Overall Percentage*
More Regulation/Enforcement	259	100.0	17.2
Water Patrols	47	18.1	3.1
PWC Regulations	39	15.1	2.5
Boating Regulation Enforcement in General	36	13.9	2.4
Speed Zones	34	13.1	2.3
Operator Licensure	31	12.0	2.1
Ramp Patrols	25	9.7	1.7
No Wake Zones	22	8.5	1.5
Waterway Congestion	17	6.5	1.1
Drinking and Boating	5	1.9	0.3
Crap Traps/Commercial Fishing	3	1.2	0.2

* Overall percentage refers to the percentage of all responses tallied from Question 27.

Improved **water quality** (i.e., less pollution, run-off, or trash) accounted for more than one third of all responses (39.4% of category 3.0% of total responses) directed at environmental protection needs (Table 38). The need to better control **red tide** outbreaks was tallied separately and characterized 21 responses, or 21% of the category. A total of 25 responses encompassed the "**less shore development**" sub-category, with seven responses in this group specifically calling for more natural areas. **More fish** was deemed most necessary to improve the boating experience in 20.2% of the category responses (1.5% of total).

Table 38. Environmental Protection Needs by Sub-Category.

Primary Need/Sub-Category	Response Number	Percent of Category	Overall Percentage*
Environmental Protection	114	100.0	7.6
Improved Water Quality	45	39.5	3.0
No Red Tide	21	18.4	1.4
Less Shore Development	25	21.9	1.7
More Fish	23	20.2	1.5

* Overall percentage refers to the percentage of all responses tallied from Question 27

The need for **boater education** (Table 39) was cited by 129 respondents and encompassed 8.6% of total responses. The need for training in **etiquette and seamanship** ranked as the 3rd highest sub-category. While frequently calling for required boating courses, such as offered by the USCG, this category also encompassed all expressions of need for more courtesy, safety, skill, or law abidance on the part of other boaters. The need for **information** primarily focused on more frequent weather reports and better detailed and current charts (11.6% of category). Environmental stewardship and awareness was one of the least reported needs and seems out of place given the relative importance placed on detractors pertaining to the **altered environment** category. It may be that respondents attribute environmental negatives including poor water quality, red tide, pollution, and trash as being more related to land-oriented factors.

Table 39. Boater Education Needs.

Primary Need/Sub-Category	Response Number	Percent of Category	Overall Percentage*
Boater Education	129	100.0	8.6
Etiquette/Safety/Skills/Regulations	112	86.8	7.4
Information (e.g., weather; charts)	15	11.6	1.0
Environmental Stewardship	2	1.6	0.1

* Overall percentage refers to the percentage of all responses tallied from Question 27

Another 7.0% of total responses conveyed the need for less regulation in order to improve their boating experience (Table 40). Over 90% of these dealt with removing or limiting speed restrictions conferred by **manatee zones** (33.0% of category), **no wake zones** (28.3%), or **speed zones** (28.3% of category). Fewer, shorter, and more appropriate (e.g., as to location, time of year enforcement) zones were advocated by some, as well as an increased speed limit on the ICW.

Table 40. Less Regulation Needs by Sub-Category.

Primary Need/Sub-Category	Response Number	Percent of Category	Overall Percentage*
Less Regulation	106	100.0	7.0
Manatee Zones	35	33.0	2.3
No Wake Zones	30	28.3	2.0
Speed Zones	30	28.3	2.0
Boating Regulation in General	9	8.5	0.6
Fishing Regulations	2	1.9	0.1

* Overall percentage refers to the percentage of all responses tallied from Question 27.

The top 10 needs by subcategory accounted for 946 (or 62.7%) of the n = 1,508 total responses to Question 27 (Table 41). The dominant expressions of need were identified with access, specifically more **ramps and ramp parking**, and with infrastructure in the form of **dredging**, especially of the passes to the Gulf. Together, these top two sub-categories accounted for almost one-third of total responses. Following the need for **boater education/courtesy or seamanship skills** (ranked 3rd), three other aspects of infrastructure need ranked 4th through 6th. These included improved **channel marks** (e.g., being lit at night), better constructed **ramp facilities** with more amenities, and more **waterside restaurants**. More water police characterized the 7th highest need for an enhanced boating experience, followed closely by **improved water quality** and more regulations aimed at **personal watercraft** use. More boating regulation or enforcement in general (and with particular respect to **speed zones)** completed the top ten need sub-categories.

Table 41. Top-10 Needs by Sub-Category.

Need Sub-Category	Response Number	Overall Percentage	Rank
More Ramps and Ramp Parking	245	16.2	1
Dredging of Passes and Channels	227	15.1	2
Etiquette/Safety/Seamanship Skills	112	7.4	3
Channel Marks Improvement	93	6.2	4
Ramp Facility Improvements	53	3.5	5
Waterside Restaurants	49	3.2	6
More Water Patrols	47	3.1	7
Improved Water Quality	45	3.0	8
More PWC Regulations	39	2.6	9
Boating Regulation Enforcement in General	36	2.4	10

Note: 26 responses indicated “No needs.”

Chapter 7. Conclusions and Recommendations

Study Findings

The goal of this study, as expressed by the Sarasota County Department of Natural Resources, was to characterize waterway use patterns and profile boaters that actively use coastal waterways within and around Sarasota County. Important study objectives were (1) to develop spatial databases of waterway use to map boating patterns within a geographic information system (GIS), and (2) to characterize the vessels, activities, and inclinations of boaters that use Sarasota County coastal waterways on the basis of waterway access categories that included marina wet slips, dry storage facilities, public ramps, and private docks. In support of the goal and primary objectives, a map-based questionnaire was mailed to 4,650 boaters that represented each of the four target waterway access groups. A total of 973 boaters completed and returned the questionnaire, which represents an average return rate of approximately 21 percent.

A compilation of the responses to a subset of survey questions reveals that the typical survey respondent:

- Is a Florida resident for at least 11 months of the year and is approximately 56 years of age;
- Has, on average, 16 years of boating experience on Florida waterways and has taken a boating safety or seamanship course;
- Owns one boat that is either an open fishing vessel or a power boat with cabin accommodations;
- Takes an average of three to four boating trips per month, with more trips taken during the late spring and summer months (April through July) and fewer trips during winter months (December through February);
- Begins their trip at approximately 7AM and spends about 5 hours on the water;
- Shows a preference for the following water-based activities in order of importance: visiting restaurants, fishing, cruising, sight-seeing, and nature viewing (this finding affirms the importance of accessible waterfront restaurants to the Sarasota County boating community);
- Perceives that a lack of seamanship and/or courtesy by other boaters detracts most from their recreational boating enjoyment, and lastly;
- Believes that infrastructure improvements and better access (e.g., improved channel dredging and marking, and more ramps with better facilities) and greater enforcement of existing boating regulations would do most to improve their recreational boating enjoyment.

A GIS density analysis of spatial trip information reported by survey respondents was used to map travel corridors and identify favorite destination locales, as well as congestion hot spots. Digitized and mapped trip information, highlighting “density of occurrence,” revealed that

boating is more prevalent in southern portions of Sarasota Bay (e.g., New Pass and Big Sarasota Pass), in and around the Venice Inlet area, and within Roberts Bay (e.g., Intracoastal Waterway and spoil islands). In contrast, the findings indicate that boating is less prevalent, on the whole, in Little Sarasota Bay, Blackburn Bay, and in Sarasota County portions of Lemon Bay. Notwithstanding, the use-density analysis revealed pockets where boating activities cluster, mostly related to the presence of boat ramps and/or restaurants within these less utilized waterways.

Sampling Results

The sampling method was designed to provide samples of sufficient size to calculate descriptive statistics for each waterway access group, based on a tolerable error of ± 0.05 and a confidence level of 95 percent. A census of vessels in marinas (were access was permitted) was used to reach boaters whose vessels were observed in marina wet slips and at dry storage facilities. Each boater associated with a vessel observed in a marina wet slip or at a dry storage facility received a survey due to the comparatively small number of vessels associated with these two waterway access categories. In contrast, a random sample was taken of boaters observed using public ramps and associated with private docks, since the available sample frame for these two access categories exceeded minimum sample size requirements.

Mail survey returns indicate that samples associated with public ramp and private dock users exceeded a tolerable error of ± 0.05 and a confidence level of 95 percent. While marina wet slip and dry storage facility categories did not meet this benchmark, and are comparatively underrepresented, the sample sizes obtained for these groups (n=138 marina wet slip and n = 149 dry storage users) were sufficiently large to allow for the computation of descriptive statistics with acceptable confidence intervals. For future comparative analyses, it is recommended that marina wet slip and dry storage facility groups be combined into a single ‘marina’ category to circumvent statistical problems associated with sample size limitations and lower survey response rates. This would allow for the collection of a larger overall sample size that would approach a maximum tolerable error of ± 0.05 at the 95 percent confidence level. Nonetheless, it was determined that a sufficiently large sample for each of the four primary waterway access groups was obtained for the purposes of the descriptive analyses conducted for this study. Notwithstanding, it should be noted that unequal survey return rates percentages (while being less of an issue with summary statistics that were applied to specific waterway access groups), may result in a ranking bias of detractors and needs issues towards those groups that responded to the survey in greater numbers (i.e., dock and ramp users) versus lower relative numbers (i.e., marina wet slip and dry storage users). That being said, a content analysis can be applied to specific user categories to alleviate the potential for unequal weighting of aggregated responses.

Survey Non-Response

Low survey response rates increase the possibility of non-response bias. Non-response bias occurs when a reported value (e.g., number of boating trips per month) deviates from the actual population value due to differences between those individuals who responded to the survey and those who did not. The usual method to increase response rates, and thus minimize non-

response bias, is to revisit cases that were unproductive (e.g., non-contacts or refusals) after initial survey rounds, with the expectation that some can be converted to respondents (Fillion, 1976, Lynn, Clarke, Martin, & Sturgis, 2001). An alternative yet less robust method involves evaluating waves of survey returns with the assumption that non-responders are more similar to reluctant responders (Green, 1991). The possibility exists that boaters who completed and returned the Sarasota County survey (21 percent of the surveys mailed) may have provided significantly different responses to questions than would have been provided by boaters who did not respond (79 percent). Based on the summary analysis, it is hypothesized that individuals who completed and returned surveys represent the more motivated and active users of Sarasota County's coastal waterways. As such, the number of boating trips per month reported by respondents is likely more than the number taken by the 'average' boater. In spite of this potential bias, an argument can be made that survey results that reflect 'active' boaters who frequently use the resource make for better planning. Nevertheless, an increase in the response rate, by reaching hard–to–get respondents, would reduce the potential for non-response bias. Therefore, it is recommended that non-response bias be evaluated by implementing a follow-up telephone survey that targets boaters (within each user group) who did not respond to the initial mail survey. Information obtained from a telephone survey of non-responders can be used to determine if the number, timing, frequency, and duration of trips reported by respondents reflect 'average' boater trip profiles.

In addition to an examination of non-response bias, a comparative spatial analysis is recommended to examine information collected from the contemporaneous aerial and mail surveys implemented for Sarasota County as part of this recreational boating characterization study. The analysis would evaluate the extent to which spatial information obtained from the two survey methods are complementary and the degree to which they capture similar (or different) boating patterns. Rasters (i.e., grids or cells) can be used to map and evaluate (1) spatial distributions and patterns of stationary and moving vessels captured by aerial surveys, and (2) destinations and routes identified by mail survey respondents. Grid cells with statistically similar aerial and mail survey information profiles can be considered to be congruent and those with statistically different use profiles can be considered to be incongruent. Boating patterns can be mapped and compared at different geographic scales of resolution to highlight the degree to which spatial information obtained from the two methods are conformant or non-conformant. A comparative spatial analysis can also be used to validate mail and aerial survey information, and offers a means to determine whether or not the information provided by mail survey respondents is representative (spatially) of the 'average' or typical boater in the region. As such, a comparative spatial analysis of aerial and mail survey information would be an important follow-up test for evaluating the possible existence of a 'spatial' bias related to survey non-response.

Boat Ramp Service Area Analysis

The spatial and temporal trip-departure data collected in this study provides valuable information on boater use-patterns (e.g., where boaters typically begin their voyages and their on-water destinations). This information may be of importance to county resource managers, as a means for estimating demand and generating waterway use profiles by boating group and selected facilities. For example, market areas for individual boat ramps can be identified and mapped through a GIS primary service area optimization method developed for Tampa Bay boat ramps

(Sidman et al., 2005). The marine facility service area analysis would use trip-origin specific survey data to determine the geographic extent of the influence (distance thresholds) of a particular facility to attract boaters. This data could be used to project facility demand and the location of potential users. A complementary analysis would evaluate destinations reported by survey respondents to estimate resource pressure indices for specific ramps, marinas, and possibly residential canal neighborhoods. This analysis could quantify the pressure placed on existing waterways, facilities, and routes from boaters originating from various types of access points (individually or by category) and the extent to which overall demand exerts pressure on existing bay resources. Geographic overlap in attraction and/or resource pressure placed on existing routes, destinations, facilities, and waterways, could be useful in determining whether use thresholds have been exceeded. In addition, this information could be useful in helping to identify appropriate and inappropriate locations for expanding existing or siting future boat launching facilities (e.g., marinas and public boat ramps).

Analysis of Seasonal Boating Trends

Survey findings suggest that Sarasota County waterways experience a year-round boating season, with a peak-use period between April and July and an off-peak period from December through February. The survey implemented for this study was timed (in the late spring) to capture peak-use boating trends. As such, the majority of trips reported by survey respondents were taken during the spring and summer months. Accordingly, the information obtained from this study may not necessarily represent the trip profiles of seasonal users (i.e., snowbirds) or corresponding use patterns during the fall and winter months. An analysis of fall and winter boating trends may be undertaken to augment spatial trip information collected during the spring and summer months. An abridged version of the survey instrument and the accompanying correspondence could be mailed to marina wet slip, marina dry storage, ramp, and private dock users who completed the initial survey and indicated that they would participate in a follow-up mail survey. This could be supplemented with additional surveys of boat ramp users associated with fall and winter periods. This strategy assumes that the vessel populations launching from marina wet slips, dry storage facilities, and private docks would remain relatively consistent. An added benefit of continuing the ramp surveys would be to acquire year-round ramp patron information that would support a boat ramp service area analysis described above.

A spatial analysis would map and evaluate waterway use patterns for each season captured by the supplemental mail surveys. A raster (e.g., grid or cell-based) analysis can be used to determine the relative proportions and distribution of destinations, and routes over the seasons. Grid cell weighting can account for seasonal differences between sample sizes and an analysis of proportions can be used to compare relative use intensities. Those cells with statistically similar weighted use proportions would be considered to have similar seasonal profiles; those with statistically different weighted use proportions would be viewed as having different seasonal profiles. In addition, the timing, frequency, and duration, of seasonal trips, and the types of activities associated with those trips can be statistically evaluated and mapped.

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Appendices

Appendix A. Questionnaire and Correspondence

Cover Letter

Recreational Boating In Sarasota County
A survey conducted by the University of Florida Sea Grant Program

Dear Boat Owner / Operator,

We are asking you to participate in a boating study being carried out in southwest Florida by the University of Florida Sea Grant Program. The study seeks to characterize boating in the area. Your responses will be very important to our efforts to help Sarasota County prioritize and improve waterway access and maintenance, and to develop map-based boating products that enhance your recreational boating experience. There are no direct risks to you for participating in this study and we are enclosing a copy of "A Sarasota County Boater's Guide" to thank you for completing and returning this questionnaire.

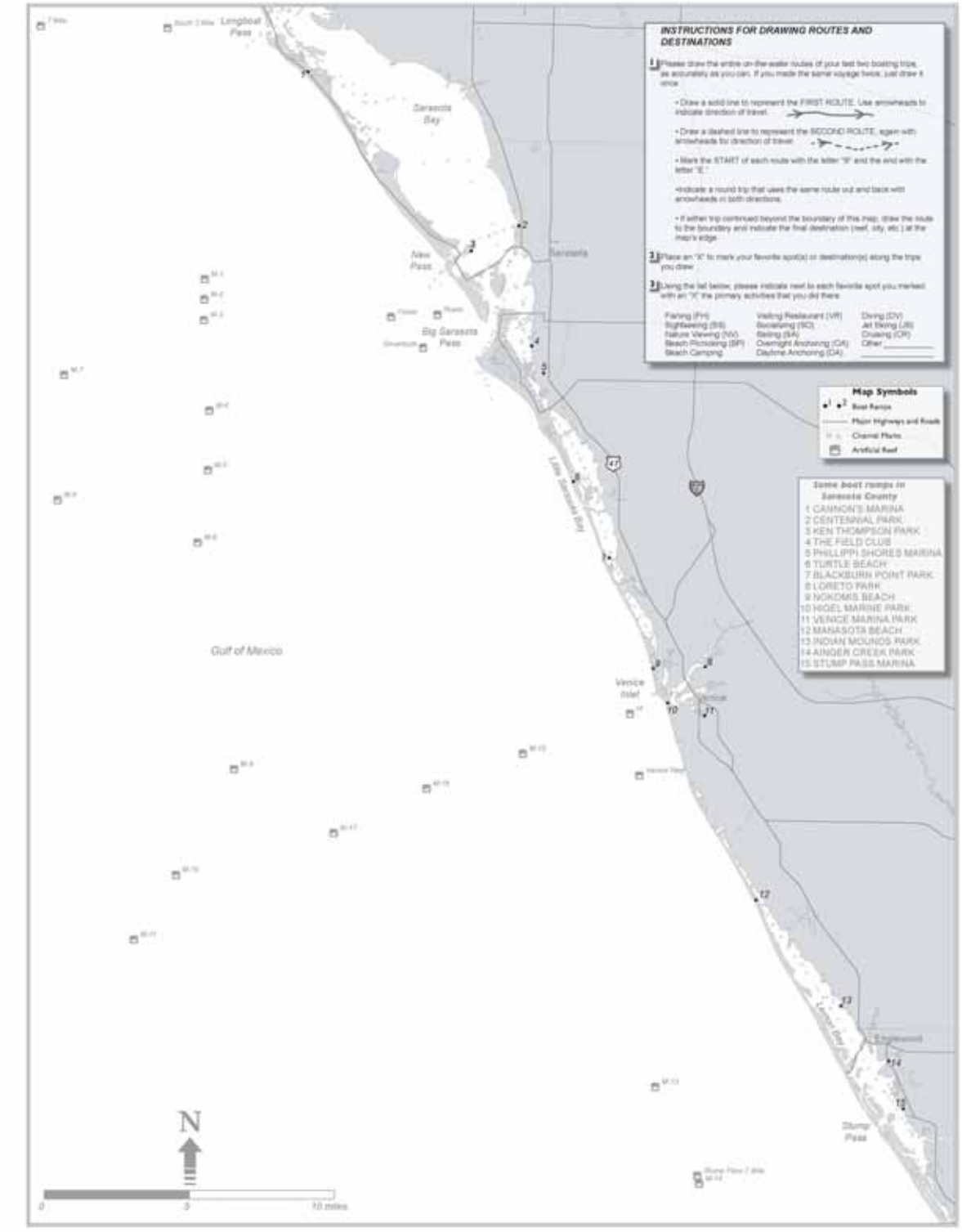
The questionnaire should take about 20 minutes to complete. We would appreciate it if you could complete and return it as soon as possible. We have provided a self-addressed, postage-paid return envelope. **Please be assured that the information you provide will be held in the strictest confidence. Answers will NOT be traced to individuals and your name or address will NOT be made available to anyone else**. Your participation is completely voluntary and you may withdraw your participation at any time without penalty. The questionnaire control number is used only to track survey returns so that we don't inconvenience you with reminder cards.

Only a small sample of boaters in Sarasota County have received this survey, so your input is very important. We recently completed a similar boating survey in the Tampa Bay area and it was a great success!

For questions about your rights as a research participant, you may contact the University of Florida Institutional Review Board at PO Box 112250, Gainesville, FL 32611 or 352-392-0433. If you have any questions about this survey or our products for boaters, you may contact Charles Sidman at the University of Florida (352) 392-6233, or by email at boatsurvey@ifas.ufl.edu

We are most grateful for your assistance in this important project.

Questionnaire Map



Questionnaire

PART 1. PLEASE DRAW THE ROUTE OF YOUR LAST TWO BOATING TRIPS

On the other side of this questionnaire is a map of Sarasota County coastal waterways. We would like you to provide information regarding your last two boating trips in this area. This will include marking your launch or departure sites, drawing your boating travel routes, and marking your favorite boating spots or destinations along those routes. ***Please refer to the instructions in the upper right portion of the map for completion of this part of the questionnaire. Thank you.***

PART 2. PLEASE DESCRIBE YOUR LAST TWO BOATING TRIPS

Question 1. Were the last two travel routes that you drew on the map typical, or not -- do you travel these routes when boating in Sarasota County waterways depicted on the map more often than not? (*Please check the appropriate box for each travel route that you drew)*

First Trip (**solid line**)	Typical	☐	Not typical	☐
Second Trip (**dashed line**)	Typical	☐	Not typical	☐

Question 2. About what time did you get on the water for each of the two trips that you drew on the map? *(For example, 7:30AM)*

First Trip (**solid line**)	Second Trip (**dashed line**)

Question 3. About how long were you on the water on each of the two trips that you drew on the map? *(Please write in the number of hours **or** days.)*

First Trip (**solid line**)	Hours	Days
Second Trip (**dashed line**)	Hours	Days

Question 4. Please circle the day of the week that you took each of the two trips that you drew on the map.

First Trip (**solid line**)	Mon Tues Wed Thurs Fri Sat Sun
Second Trip (**dashed line**)	Mon Tues Wed Thurs Fri Sat Sun

Question 5. Please circle the month(s) in which you took each of the two trips that you drew on the map.

First Trip (**solid line**)	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Second Trip (**dashed line**)	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Question 6. From the list below, please check the box beside the vessel type that best describes the boat that you used on each of the two trips that you drew on the map.

Trip 1	Vessel Type	Trip 2
☐	Jet Ski / Personal Watercraft	☐
☐	Kayak / Row / Canoe	☐
☐	Sailboat (no cabin)	☐
☐	Sailboat (with cabin)	☐
☐	Speed: Runabout / Jet Boat (no cabin)	☐
☐	Speed: Scarab / Cigarette (with cabin)	☐
☐	Open Fisherman / Flats / Skiff / John boat	☐
☐	Offshore Sportfisherman (with cabin)	☐
☐	Power Cruiser (with cabin)	☐
☐	Deck Boat	☐
☐	Pontoon Boat	☐
☐	Other (specify)_____	☐

Question 7. Please enter the make/model, length, and draft of the boat(s) that you identified above. (*Draft is how far below the water surface your prop or hull extends*.)

First Trip (**solid line**)	Make / Model	Length (feet)	Draft *(feet / inches)*
Second Trip (**dashed line**)	Make / Model	Length (feet)	Draft (feet / inches)

PART 3. PLEASE DESCRIBE YOUR TYPICAL BOATING TRIPS

Question 8. Please indicate, in the boxes below, the number of days per month that you operate your boat within the mapped Sarasota County coastal waterways.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Question 9. Which of the following are important to you in selecting your typical boating routes? (*For a-k in the table below, check the box that best describes your opinion.*)

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a) I try to avoid congested areas / crowds.	☐	☐	☐	☐	☐
b) I try to avoid shallow water.	☐	☐	☐	☐	☐
c) The fishing is good.	☐	☐	☐	☐	☐
d) I prefer well-marked channels.	☐	☐	☐	☐	☐
e) I prefer calm protected waters.	☐	☐	☐	☐	☐
f) I try to avoid speed zones.	☐	☐	☐	☐	☐
g) None are important. I just cruise around.	☐	☐	☐	☐	☐
h) Easy access to supplies or fuel	☐	☐	☐	☐	☐
i) Quick access to my favorite boating spots	☐	☐	☐	☐	☐
j) I enjoy the scenic beauty.	☐	☐	☐	☐	☐
k) Other (*specify*)	☐	☐	☐	☐	☐

Question 10. From the list (*a–k*) above, circle the letter associated with the most important reason for selecting your favorite boating routes.

Question 11. Please check the box to the **left** of your typical departure site.

☐ Boat ramp ☐ Shoreline / causeway ☐ Marina wet slip
☐ Home dock ☐ Condominium dock ☐ Marina dry storage
☐ Other (*specify*)

If you normally depart from a marina, the shoreline, or a ramp, please answer the following questions. If you normally depart from a residential or condominium dock, please skip to Question 18.

Question 12. What marina do you depart from most often? (*If you launch from a ramp, including a marina ramp, please skip to Question 14.)*

Name / Location _____

Question 13. About how long does it take to drive from your home to the marina that you depart from most often?

Hours _____ Minutes _____

Question 14. If you use the shoreline or boat ramps (*including marina ramps*), please identify your two most frequently used shoreline locations or ramps and the approximate number of times per year do you use each. (*A list of some ramps is provided on the other side of this questionnaire.)*

Ramp or Shoreline Name/Location	times per year
First Choice	
Second Choice	

Question 15. About how long does it take to drive from your home to the shoreline locations or two ramps that you identified in Question 14?

Ramp Name/Location	Hours	Minutes
First Choice		
Second Choice		

Question 16. What is important to you in selecting a marina, shoreline, or ramp? (*For a-n in the table below, check the box that best describes how important it is to you, or leave blank if not applicable.*)

Statement	**Very Important**	**Important**	**Neutral**	**Unimportant**	**Very Unimportant**
a) Deep-water access	☐	☐	☐	☐	☐
b) Availability of restrooms	☐	☐	☐	☐	☐
c) No parking or launching fee	☐	☐	☐	☐	☐
d) Well-marked access channels	☐	☐	☐	☐	☐
e) Proximity to my favorite boating spots	☐	☐	☐	☐	☐
f) Adequate parking	☐	☐	☐	☐	☐
g) Availability of fishing supplies, bait	☐	☐	☐	☐	☐
h) Short wait to launch.	☐	☐	☐	☐	☐
i) Gas, pump-out, or maintenance service	☐	☐	☐	☐	☐
j) Nearby amenities (e.g., restaurant)	☐	☐	☐	☐	☐
k) Proximity to my home	☐	☐	☐	☐	☐
l) Ease of launching and retrieving boat	☐	☐	☐	☐	☐
m) Safe and secure parking area	☐	☐	☐	☐	☐
n) Other factor (*specify*)	☐	☐	☐	☐	☐

Question 17. From the list (*a–n*) above, please circle the letter associated with the most important reason for selecting a marina, shoreline, or ramp.

Question 18. What are your activities on your typical boating trips? (*Check all that apply.*)

☐ Beach Picnicking (**BP**)	☐ Nature Viewing (**NV**)	☐ Sightseeing (**SS**)
☐ Cruising (**CR**)	☐ Daytime Anchoring (**DA**)	☐ Socializing (**SO**)
☐ Diving (**DV**)	☐ Overnight Anchoring (**OA**)	☐ Visiting Restaurant (**VR**)
☐ Fishing (**FH**)	☐ Sailing (**SA**)	☐ Swimming (**SW**)
☐ Ski / Water Sports (**WS**)	☐ Other (**O**) (*specify*) _____	

Question 19. Based on your boating experiences **over the past year**, have you avoided or left your favorite spots or destinations because of too many other boaters? ☐ Yes ☐ No

Question 20. In which areas, if any, have you experienced the greatest amount of boat congestion? **Please mark congested areas on the map with the letter "C."** ***("Congestion" refers to the presence of more boats than you would prefer.)***

PART 4. PLEASE DESCRIBE YOURSELF

Question 21. How many months per year do you live in Florida? _____(*Months*)

Question 22. How long have you been operating a vessel in Florida's coastal water? _____(*Years*)

Question 23. Have you ever taken a boat safety or seamanship course? ☐ Yes ☐ No

Question 24. In what year were you born? _____

Question 25. Would you participate in a future internet and / or mail survey to provide further information on your boating experiences? **Internet** Yes ☐ No ☐ **Mail** Yes ☐ No ☐

Question 26. What detracts most from your boating experience?

Question 27. What is needed most to improve your boating experience?

PLEASE RETURN THE QUESTIONNAIRE AND MAP IN THE ENCLOSED POSTAGE-PAID ENVELOPE
THANK YOU VERY MUCH FOR YOUR TIME AND PARTICIPATION!

Questionnaire Control Number
(used only to keep track of survey returns)