

A Recreational Boating Characterization for Collier County, Florida

Presented By:

Bryan Fluech

Florida Sea Grant Extension Agent
County Extension Director, UF/IFAS
Collier County, Florida

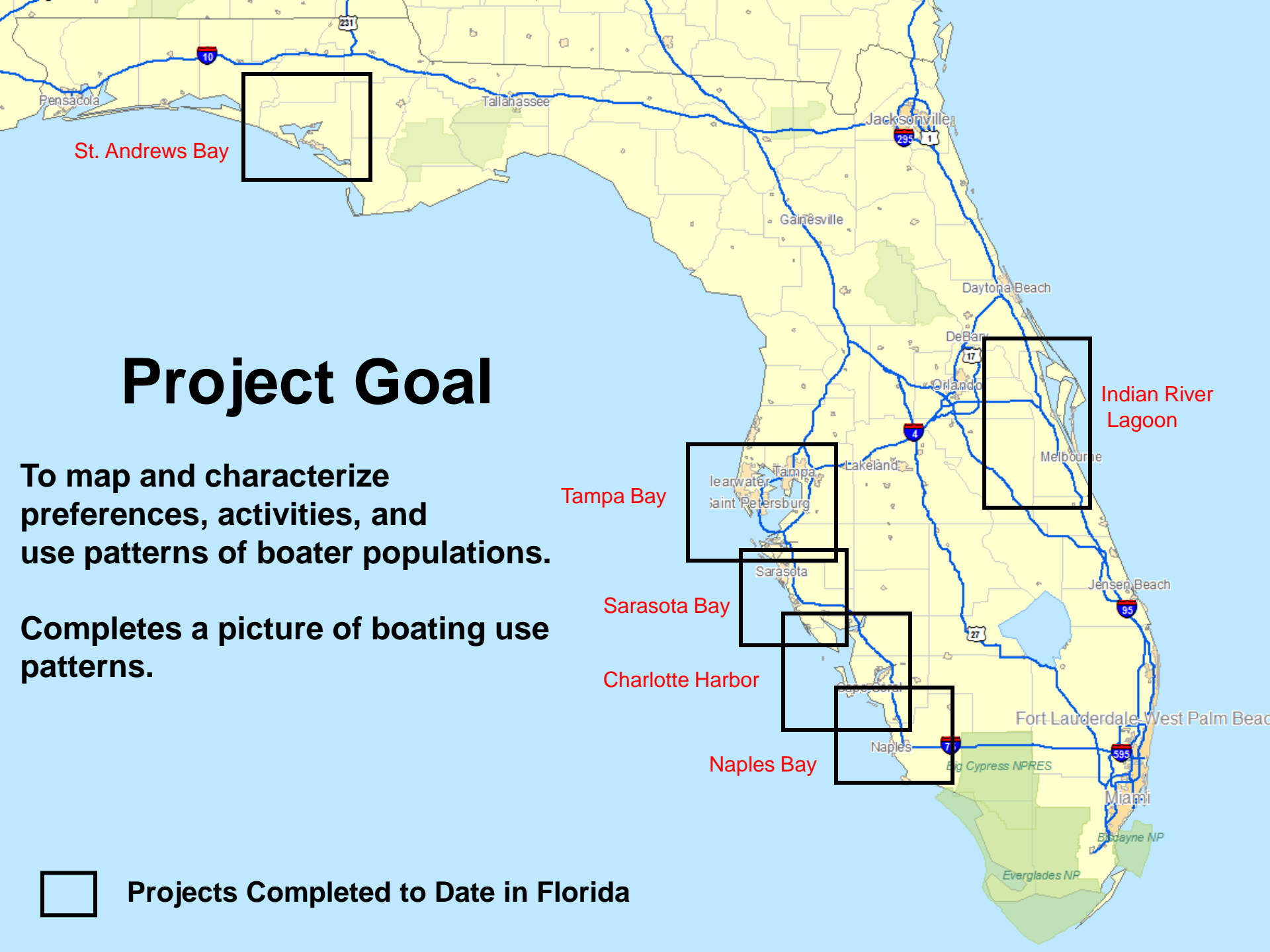
At The:

National Working Waterfronts & Waterways Symposium
March 25-28, 2013
Tacoma, Washington

An aerial photograph of a tropical waterway, likely a canal or bay. The water is a clear, light blue-green color. On the left side, there are several large, modern houses with swimming pools, surrounded by lush greenery and palm trees. In the center, there is a small, sandy island with a few trees and a small beach. On the right side, there are more houses and a marina with several boats docked. The overall scene is a peaceful, affluent residential area.

Outline

- **Project Goal & Objectives**
- **Survey Instrument**
- **GIS Database Design**
- **Spatial Patterns Analysis**
- **Descriptive Analysis for Collier boaters**
- **Applications**



St. Andrews Bay

Indian River Lagoon

Tampa Bay

Sarasota Bay

Charlotte Harbor

Naples Bay

Project Goal

To map and characterize preferences, activities, and use patterns of boater populations.

Completes a picture of boating use patterns.

 Projects Completed to Date in Florida

Questions to be Answered

- Who are the boaters? (demographics)
- Where are boaters coming from?
- Where and how do they access the water?



- Where do they travel on the water?
- What are preferred destinations?
- What activities are conducted?

Sample Elements

- Marina Wet Slip
- Dry Storage Facility
- Public Ramp
- Private Dock



Marina Sample

• MARINA OR YACHT CLUB
AT WHICH SURVEYS
WERE DISTRIBUTED



Project personnel visited 27 marinas;
unable to obtain access at four.

They logged vessel registration
numbers or vessel names and
hailing ports.

Logged information was used to
obtain vessel owner names and
addresses from VTRS or USCG
databases.

The result was information for 1,823
unique vessel owners who were then
sent a mail survey.

Marina personnel addressed and
mailed 804 of the 1,823 surveys.

Ramp Sample

* BOAT RAMP AT WHICH VESSEL DATA WERE OBTAINED



13 Collier County ramps were visited multiple times between 6/08 and 6/09.

- 3 weekend days per month (7,180)
- weekdays at busy ramps (623)

Logged tow vehicle and trailer license plate numbers for **7,803** new and repeat users.

Owner name and mailing address acquired for **3,666** unique VTRS matches.



Dock Sample

• DOCK SAMPLE

Shoreline data was used to select waterfront parcels from Collier County property records.

Then matched names and addresses of vessel owners from VTRS to parcel owner names and addresses from property records.

The result was 2,161 vessels owners associated with a shorefront parcel.

They served as the dock sample for the mail survey.



Map-Based Boater Survey

Map B

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

This questionnaire has two maps. Map A (to the right of these questions) shows the Naples and Marco Island areas in detail. Map B (on the reverse side) shows greater offshore areas. On the more appropriate map or maps, please provide information about your last two boating trips in the past 12 months. This will include marking your launch or departure sites, drawing your boating travel routes, and marking your boating activity spots or destinations along those routes. Please refer to the "instructions for drawing routes and destinations" boxes on the maps. Thank you!

If you have not boated in the Collier County area in the past year, please check here and return the survey in the postage-paid envelope. Again, we thank you.

PART 2. PLEASE DESCRIBE YOUR LAST TWO BOATING TRIPS

Question 1. 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)	AM	PM
-------------------------	----	----

Question 11. What is important to you in selecting a ramp, marina, or shoreline/causeway? (In the table below, check the box that best describes how important each factor is to you.)

Statement	Very Important	Important	Neutral	Unimportant	Very Unimportant
a) Deep-water access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Restroom availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) No parking or launch fee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Well-marked access channels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Friendly to my favorite boating sports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Adequate parking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Availability of fishing supplies, fuel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Short wait to launch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Maintenance service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Fuel availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Puerto-rick availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Nearby amenities (e.g., restaurant)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The survey questionnaire was sent in 3 waves to account for seasonality

- June-July
- November
- March

Boaters were asked if they were willing to answer a follow-up questionnaire

Question 8. Please provide the name or location of the ramp, marina, or shoreline/causeway from which you departed on each of your last two trips that you drew on the map.

First trip: _____

Second trip: _____

Question 9. About how long does it take to drive from your home to the ramp, marina, or shoreline/causeway that you identified in Question 8?

First trip: Hours _____ Minutes _____

Second trip: Hours _____ Minutes _____

Question 10. Is there a boat ramp that you would like to use, but avoid? Yes No

If yes, please name the ramp: _____

Please check all of the following that apply to the ramp you would like to use, but avoid.

- | | | |
|--|---|---|
| <input type="checkbox"/> Water too shallow | <input type="checkbox"/> Lane(s) too narrow | <input type="checkbox"/> Bad or no pavement |
| <input type="checkbox"/> Slope too steep | <input type="checkbox"/> Slope not steep enough | <input type="checkbox"/> Inadequate parking |
| <input type="checkbox"/> No restrooms | <input type="checkbox"/> Too crowded | <input type="checkbox"/> Inadequate docks |
| <input type="checkbox"/> Other | | |

access to the water? Please

amount of boat congestion on the letter "C." ("Congestion" #)

BOATING TRIPS

month that you operated your

Oct Nov Dec

or typical boating routes?

as your opinion.)

	neutral	Disagree	Strongly Disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(check all that apply.)

Sightseeing

Socializing

Visiting Restaurant

Swimming

Jet Skiing

SELF

only area? _____ years.

er? Yes No

Question 20. What is the ZIP code of your primary residence? _____

Question 21. What detracts most from your Collier County boating experience?

Question 22. What is needed most to improve your Collier County boating experience?

PLEASE RETURN THIS QUESTIONNAIRE IN THE ENCLOSED POSTAGE-PAID ENVELOPE.

THANK YOU VERY MUCH FOR YOUR TIME AND PARTICIPATION.

Map-Based Boater Survey

Map B

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

This questionnaire has two maps. Map A (to the right of these questions) shows the Naples and Marco Island areas in detail. Map B (on the reverse side) shows greater offshore areas. On the more appropriate map or maps, please provide information about your last two boating trips in the past 12 months. This will include marking your launch or departure sites, drawing your boating travel routes, and marking your boating activity spots or destinations along those routes. Please refer to the "instructions for drawing routes and destinations" boxes on the maps. Thank you!

If you have not boated in the Collier County area in the past year, please check here and return the survey in the postage-paid envelope. Again, we thank you.

PART 2. PLEASE DESCRIBE YOUR LAST TWO BOATING TRIPS

Question 1. About what time did you get on the water for each of the two trips that you drew on the map? (For example, 7:30 AM)

First trip (solid line)	AM	PM
Second trip (dashed line)	AM	PM

Question 2. 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 11. What is important to you in selecting a ramp, marina, or shoreline/causeway? (In the table below, check the box that best describes how important each factor is to you.)

Statement	Very Important	Important	Neutral	Unimportant	Very Unimportant
a) Deep-water access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Restroom availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) No parking or launch fee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Well-marked access channels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Proximity to my favorite boating spots	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Adequate parking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Availability of fishing supplies, fuel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Short wait to launch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Maintenance services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Fuel availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Protected moorings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Nearby amenities (e.g. restaurant)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Proximity to my home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Ease of launching and retrieving boat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Safe and secure parking area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 12. At which sites, if any, have you felt the need for additional access to the water? Please mark these sites with an 'A' on your trip map.

- 9,309 surveys mailed
- 2,067 surveys returned
 - 21% overall return rate
 - 17% return rate for long surveys
 - 50% return rate for short surveys (repeats)

<input type="checkbox"/>	Boat ramp	<input type="checkbox"/>
<input type="checkbox"/>	Shoreline/causeway	<input type="checkbox"/>
<input type="checkbox"/>	Marina wet slip	<input type="checkbox"/>
<input type="checkbox"/>	Marina at condominium dock	<input type="checkbox"/>
<input type="checkbox"/>	Marina dry storage	<input type="checkbox"/>

If you departed from a ramp, marina, or shoreline/causeway, please answer the following questions. If you departed from a residential or condominium dock, please skip to Question 13.

Question 8. Please provide the name or location of the ramp, marina, or shoreline/causeway from which you departed on each of your last two trips that you drew on the map.

First trip: _____
Second trip: _____

Question 9. About how long does it take to drive from your home to the ramp, marina, or shoreline/causeway that you identified in Question 8?

First trip: Hours _____ Minutes _____
Second trip: Hours _____ Minutes _____

Question 10. Is there a boat ramp that you would like to use, but avoid? Yes No
If yes, please name the ramp: _____

Please check all of the following that apply to the ramp you would like to use, but avoid.

<input type="checkbox"/> Water too shallow	<input type="checkbox"/> Lane(s) too narrow	<input type="checkbox"/> Bad or no pavement
<input type="checkbox"/> Slope too steep	<input type="checkbox"/> Slope not steep enough	<input type="checkbox"/> Inadequate parking
<input type="checkbox"/> No outflows	<input type="checkbox"/> Too crowded	<input type="checkbox"/> Inadequate docks
<input type="checkbox"/> Other _____		

PART 4. PLEASE DESCRIBE YOURSELF

Question 17. How long have you been operating a boat in the Collier County area? _____ years.

Question 18. Have you ever taken a boating safety or seamanship course? Yes No

Question 19. In what year were you born? _____

Question 20. What is the ZIP code of your primary residence? _____

Question 21. What detracts most from your Collier County boating experience?

Question 22. What is needed most to improve your Collier County boating experience?

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

GIS Boating Data

- 3,770 Origins
- 3,770 Travel Routes
- 6,162 Destinations
- 1,047 Congestion Spots
- 296 Access Wanted

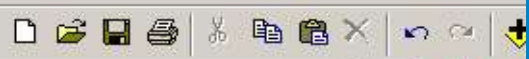
Selected Attributes of Destinations_Collier_Spring_All

FID	Shape	ID	TRIP	FH	SS	NV	BP	BC	VR	SO	SA	OA	DA	DV	JS	CR	SW	UNIQUEID	RAMP	WS	Month	Marina	Other
670	Point	21048	1				Y											21048_1	0		4	25	
1140	Point	21149	1				Y											21149_1	11		3	0	
745	Point	21249	1	Y			Y											21249_1	10		7	0	shelling
748	Point	21249	2	Y			Y											21249_2	0		7	0	
630	Point	21257	1				Y											21257_1	8		5	0	

Record: 0 Show: All Selected Records (114 out of 1943 Selected) Options

GIS Boating Data

File Edit View Bookmarks Insert Selection Tools



- Layers
- All_Collier_Access
- All_Collier_Congestion
- All_Collier_Destinations
- All_Collier_Origins
- Origins_CollierSpring_DF
- The Kidd
- Artificial Reef
- All_Collier_Routes_Doub
- All_Collier_Routes
- Shoreline_40k_No_Lakes
- DOQQs2



Attributes of All_Collier_Routes_Doubled_RT

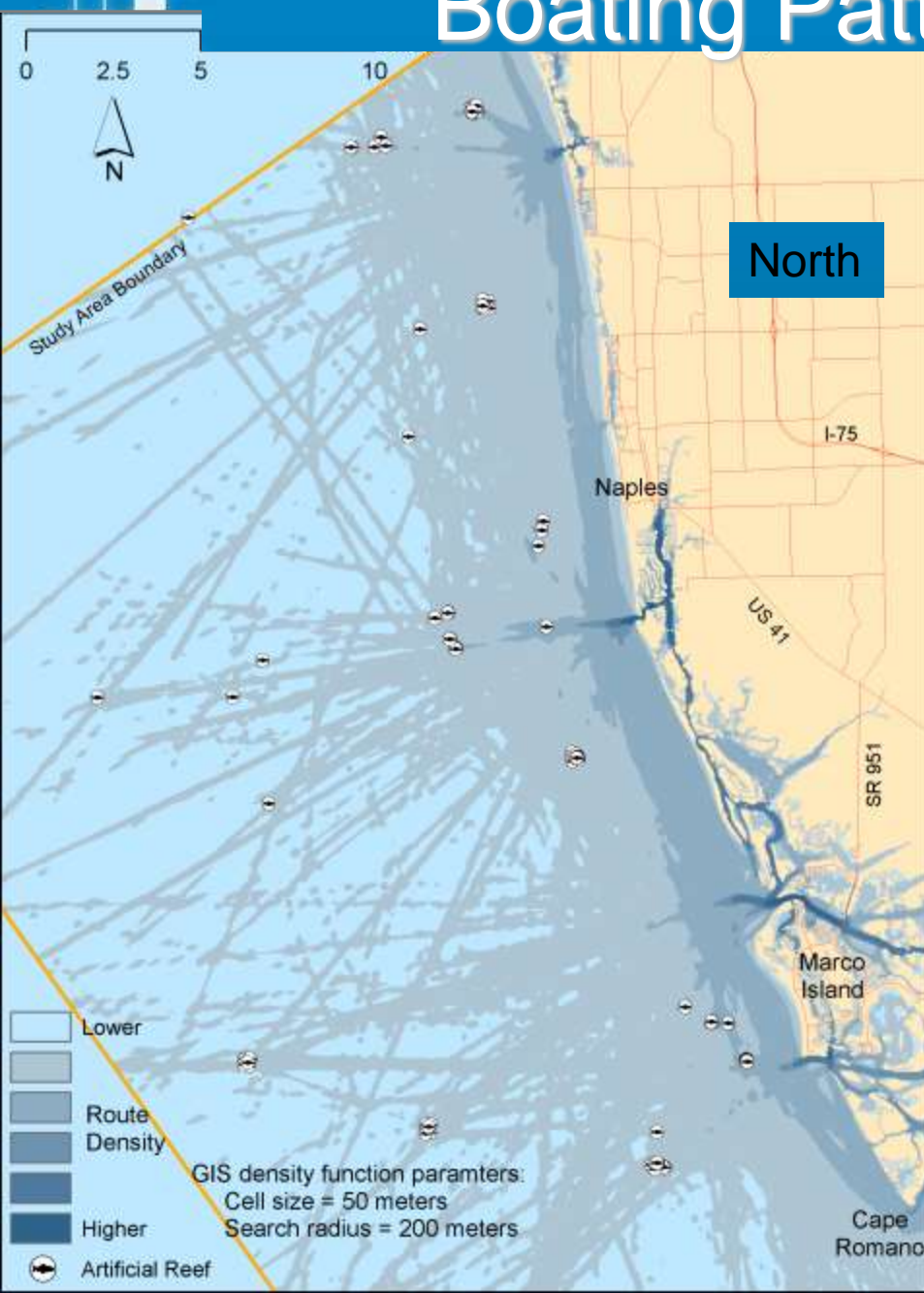
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2638	Polyline	183	1	N		Y	183_1	Origin: Burnt Store, Lee		0	10	26	DF
2639	Polyline	183	2	Y	N	N	183_2			0	10	10	DF
2640	Polyline	3168	1	Y	N	N	3168_1			0	1	0	DF
2641	Polyline	3168	2	Y	Y	N	3168_2			0	11	0	DF



Displa Record: 1 Show: All Selected Records (1 out of 5297 Selected) Options

Editor Task: Create New Feature Target:

Boating Pattern Analysis



Boating Pattern Analysis



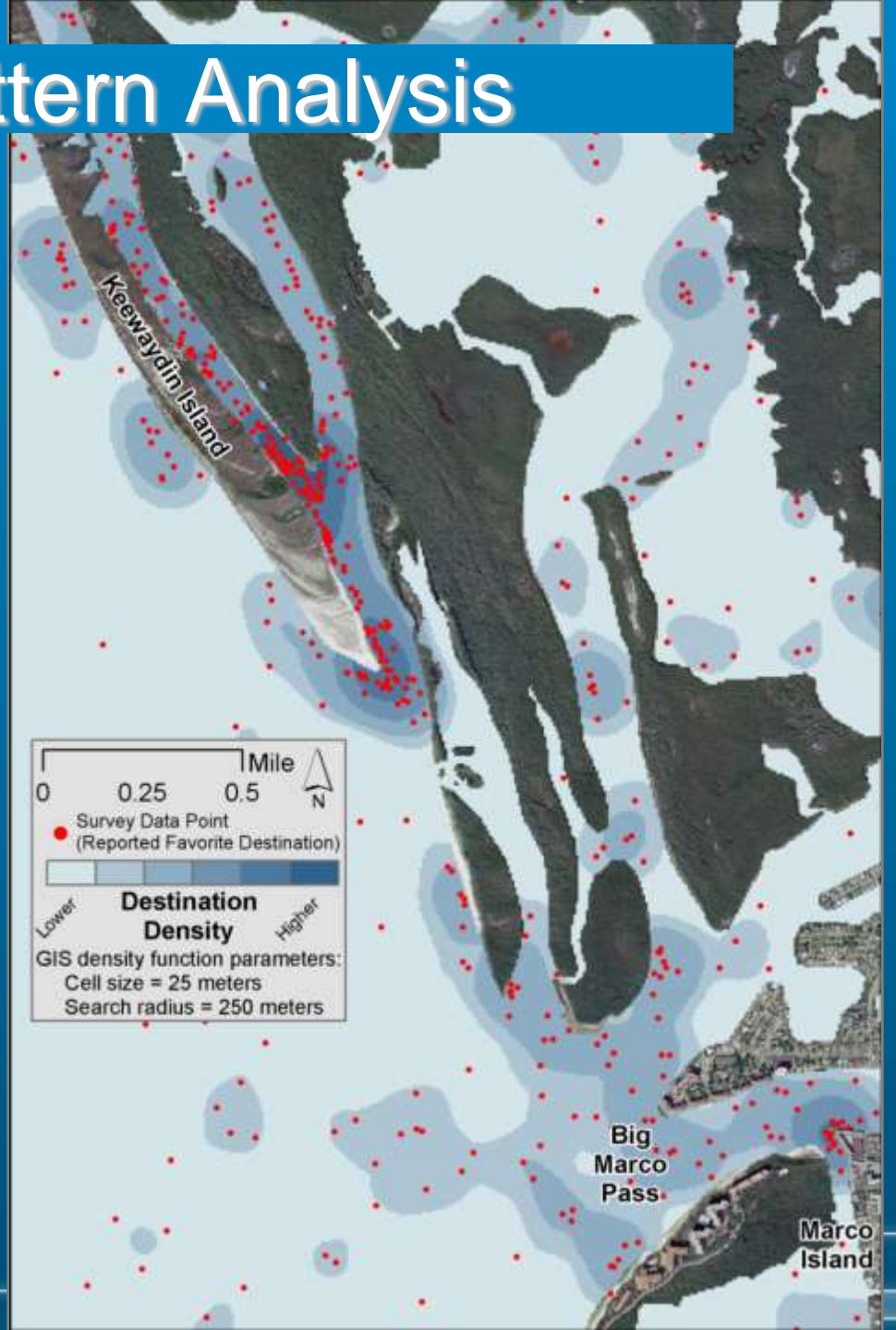
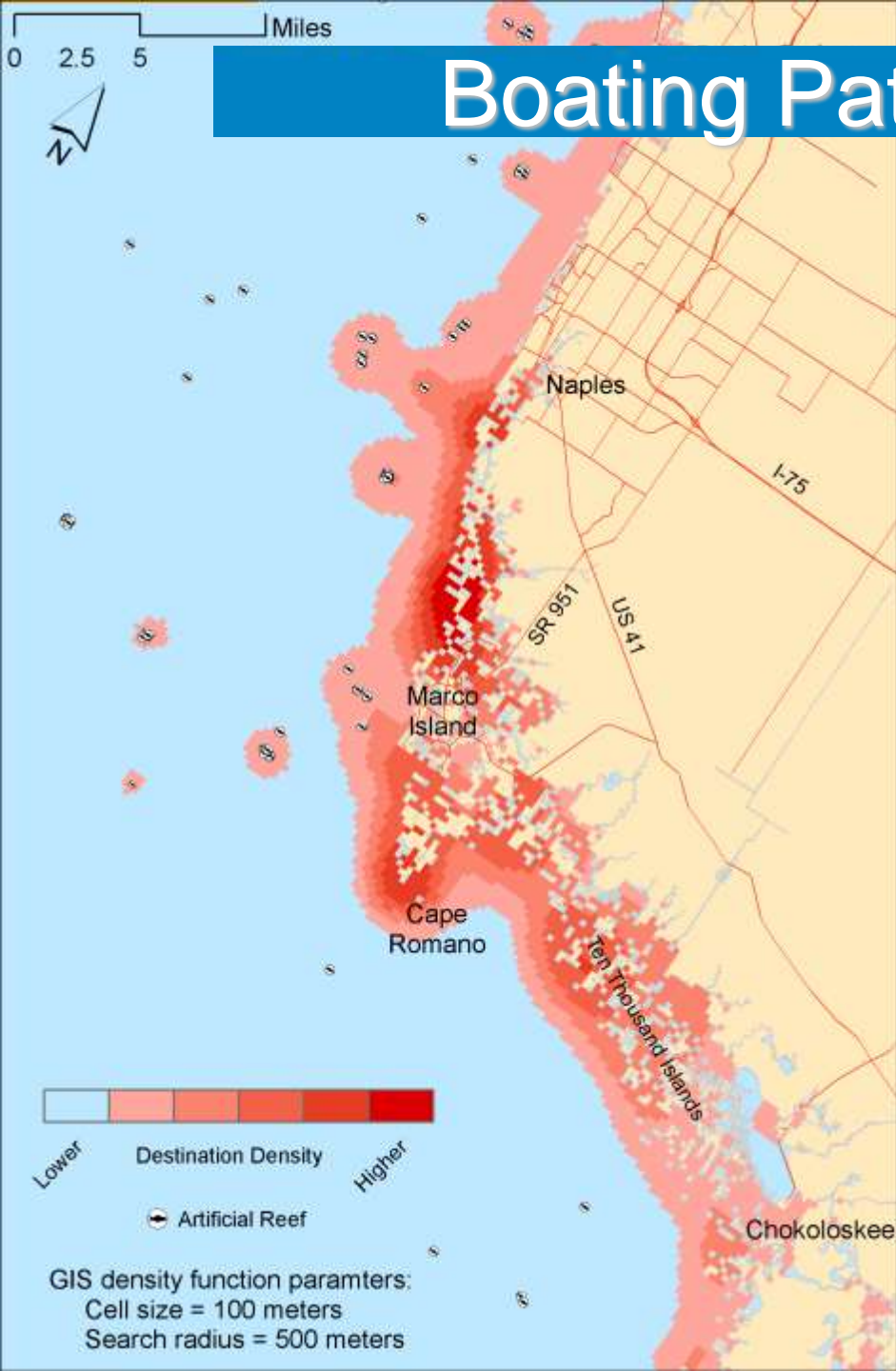
North



South

Pass / Channel (north to south)	# of routes through Pass	% of routes through Pass
Delnor-Wiggins Pass	413	11%
Doctors Pass	53	1%
Gordon Pass	774	20%
Hurricane Pass	229	6%
Capri Pass	652	17%
Big Marco Pass	64	2%
Caxambas Pass	436	11%
Blind Pass	99	3%
Snook Hole Channel	229	6%
"South Approach"	212	5%
Coon Key Pass	549	14%
Whitney Channel	146	4%
Total	3,856	100%

Boating Pattern Analysis



Boaters' Activities by Category

Activity	All Areas		Wiggins Pass	
	% Boaters	Rank	% Boaters	Rank
Fishing	78	1	43	1
Nature Viewing	54	2	31	5
Cruising	45	3	38	2
Sight Seeing	41	4	31	6
Beach Picnicking	41	5	27	7
Socializing	39	6	31	4
Visit Restaurants	35	7	32	3
Swimming	30	8	23	8
Day Anchor	24	9	17	9
Beach Camping	14	10	6.3	13
Diving	11	11	9.5	12
Overnight Anchor	10	12	10	11
Water Ski/Sports	9.6	13	11	10
Sailing	3.6	14	1.9	15

Typical Respondent: Detractors

Perceives that lack of seamanship/boating knowledge or “common courtesy” and a lack of parking at, for example, Bayview Park and Collier Blvd. Boating Park detracts most from their boating experiences.

Detractor Sub-Category (n = 1,424 responses)	Response Number	Overall Percentage	Rank (39 total)
Other boaters' behaviors	169	11.9	1
Inadequate ramp parking	110	7.7	2
Too few public ramps / ramp congestion	104	7.4	3
Congestion on waterways	99	7.0	4
Speed zones / No wake zones	98	6.9	5
PWC operators	79	5.5	6
Lack of dredging (shoaling)	77	5.4	7
No detractors	72	5.1	8
Speeding and big wakes	66	4.6	9
Water pollution / Floating trash	49	3.4	10

Reasons for Selecting Favorite Launch or Departure Sites

Reason / Description	Response Number	Response Score	Rank
Well-marked channels	889	1.02	1
Safe and secure parking	894	1.59	2
Adequate parking	888	1.61	3
Ease of launching / retrieving boat	884	1.75	4
Proximity to favorite boating spots	877	1.84	5
Short wait to launch	874	1.99	6
Proximity to home	889	2.35	7
No parking or launch fees	865	2.44	8
Availability of restrooms	875	2.46	9
Deep-water access	880	2.53	10

Reasons for Selecting Favorite Travel Routes

Reason / Description	Response Number	Response Score	Rank
Enjoy scenic beauty	1209	1.60	1
Avoid congested areas	1218	1.73	2
Fishing is good	1198	2.03	3
Prefer well-marked channels	1220	2.07	4
Quick access to favorite boating spots	1163	2.16	5
Prefer calm, protected waters	1212	2.25	6
Avoid shallow water	1228	2.38	7
Easy access to supplies or fuel	1176	2.98	8
None are important – just cruise around	1070	3.72	9

County Applications

Collier Blvd. Boat
Ramp Expansion

BP Oil Spill
Artificial Reef Grant

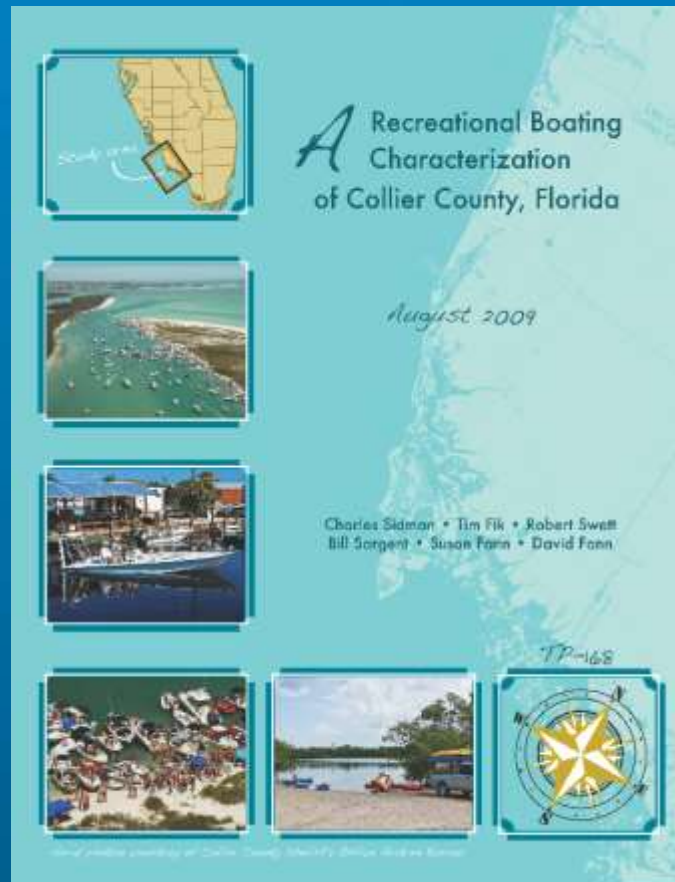


Photo by Florida Aerial Services, Inc

022310-4947



Thank You



<http://nsgl.gso.uri.edu/flsgp/flsgps09001.pdf>

Dr. Bob Swett- rswett@ufl.edu
Bryan Fluech - fluech@ufl.edu