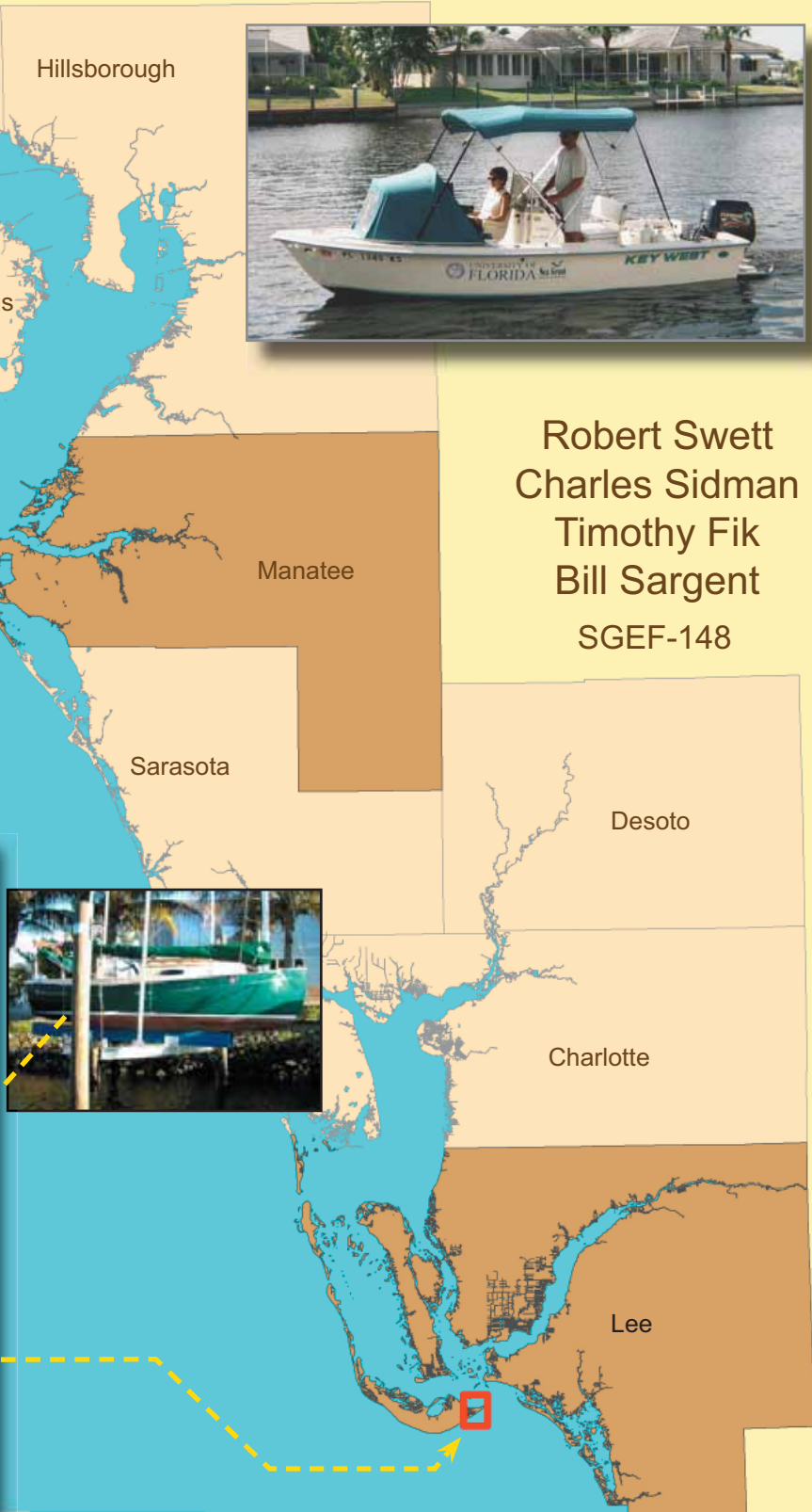




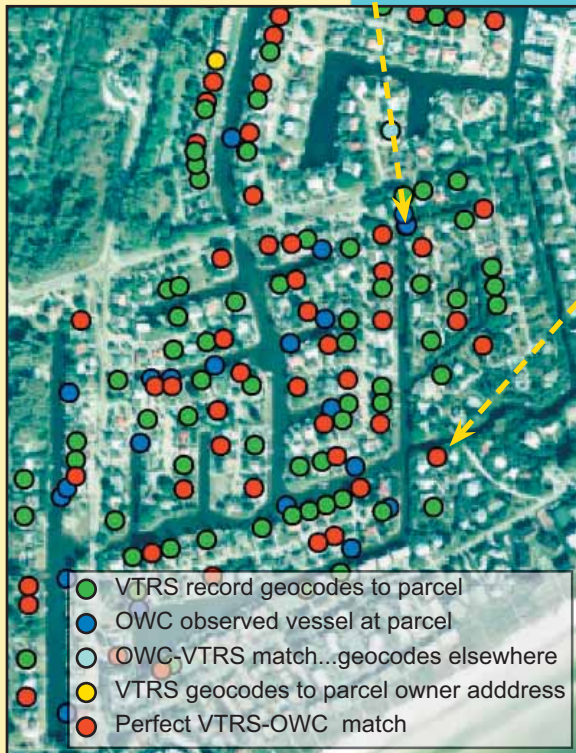
# Florida's Vessel Title Registration System as a Source of Boat Locations and Characteristics

A Case Study in Lee and Manatee Counties

– Summary Report –



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## **SUMMARY REPORT**

# Florida's Vessel Title Registration System as a Source of Boat Locations and Characteristics:

## A Case Study in Lee and Manatee Counties

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## Introduction

Research was undertaken to determine if Florida's Vessel Title Registration System (VTRS) is an accurate and reliable information source for waterway management and planning applications. Especially important was to determine if the VTRS can provide locations and characteristics for boats situated along coastal, salt-water accessible parcels. The research results provide insights into the accuracy and reliability of the VTRS and a measure of confidence regarding the capability of the VTRS to supply location and attribute information for boats that ply Florida's coastal waterways.

The VTRS was originally designed as an accounting system to levy fees and to document vessel ownership. As the boating population has grown,<sup>1</sup> however, the demands on this information source have surpassed the original intent. Technological advances now allow the integration of information contained in non-spatial databases such as Florida's VTRS (e.g., boat type, length, model, and vessel owner mailing address) with spatial data (e.g., property parcels and street maps). The results and recommendations that stem from this research effort offer the possibility of a spatially enabled inventory of Florida's recreational boat populations.

## Study Area

The research was implemented for selected areas of Lee and Manatee counties where Florida Sea Grant (FSG) previously completed comprehensive waterway management projects along salt-water accessible waterways. Lee and Manatee counties represent two distinct geographic boating regions separated by a distance of approximately 75 miles. The two counties offer a broad range of physical, demographic, and socioeconomic conditions, thus enhancing the transferability of research results to other, similar areas in Florida.

The Lee County and Manatee County study area consisted of 12,064 residential and commercial parcels situated on salt-water accessible canals and waterways. Forty-two geographic units of analysis (GUA) were delineated within the two counties. Each GUA encompassed contiguous parcels and adjacent canals and waterways that are equivalent in terms of physical, demographic, and socioeconomic characteristics.

## Objectives

Study objectives were to (1) determine the degree of congruence (correspondence) between information contained within the VTRS and boat locations and characteristics obtained via a comprehensive on-water vessel census (OWC); (2) determine if discrepancies between the VTRS and the OWC can be explained by geographic, physical, demographic, or socio-economic factors; (3) identify, categorize, and explain discrepancies between the VTRS and the OWC for vessel and property owners linked to the study area; and (4) determine if VTRS information can be substituted for an OWC, through a statistical comparison of means, medians, and distributions of vessel drafts within the study area.

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<sup>1</sup> Florida's population increased by 64% between 1980 and 2000, while recreational boat registrations increased by 82%; boat registrations in southwest Florida (Collier, Lee, Charlotte, Sarasota, and Manatee counties) increased by 97% while population increased by 103% (Florida Statistical Abstract, 1980, 2000; <http://quickfacts.census.gov/qfd/states/120001k.html>).

## Results

Research results indicate that **the VTRS can provide a reliable assessment for approximately 80 percent of the boat population<sup>2</sup> in an area.** In contrast, the OWC provided a reliable assessment for less than 60 percent of the boat population in the same area. While in general the VTRS outperforms an OWC, there are situations when the VTRS should be supplemented with an OWC. These situations include areas with a large transient or seasonal boater population. Combining VTRS information with an OWC, while increasing costs relative to the VTRS method alone, will provide a better assessment of the boat population than using one of the methods in isolation and still provide a net cost savings.

The VTRS has potential to replace, or augment, an OWC as a source for obtaining vessel drafts. Results from a statistical comparison of the means, medians, and distributions of vessel drafts indicate that the VTRS can more than adequately serve this purpose. The results show that VTRS information could serve as a substitute for an OWC when implementing accessibility analyses to prioritize local and regional waterway maintenance projects. Unfortunately, entry of vessel draft when registering or renewing the registration of a boat is not mandatory. Furthermore, the VTRS data field that contains vessel draft is not included in the ‘Data Sales Database’ that is distributed by the Florida Department of Highway Safety and Motor Vehicles (DHSMV).

## Issues and Recommendations

Two workshops were held to (1) identify current uses of boat and boater data; (2) establish information needs from business, law enforcement, regulatory, and resource management perspectives; and (3) develop strategies to implement user recommendations. Ten issues and recommendations that address specific inconsistencies and limitations that hinder use of the VTRS for planning and managing Florida’s waterways resulted from the workshops and from the research.

**Issue 1:** Important for planning and waterway management in coastal areas is knowledge of the geographic location where owners moor their vessels (i.e., where most voyages or trips begin). Currently, the only location information provided by the DHSMV in the ‘Data Sales Database’<sup>3</sup> is the mailing address of the vessel owner. Estimating the boat population (locations) based on mailing address is subject to errors since, as the study reveals, the mailing address may not correspond to the geographic location of a vessel.

**Recommendation 1:** A potential solution is to require that, during registration and renewal, vessel owners enter an address that corresponds to the Florida location where their vessel is principally used (moored). The address should be one that can be geocoded to a street or parcel (i.e., not a PO Box, Rural Route, General Delivery, etc.). The location could be the street address of a wet slip, the principal waterway and ramp used by a trailered boat, or the facility (e.g., dry stack, marina) from which the vessel is launched, etc.

**Issue 2:** Data entry errors, such as misspellings or incomplete or poorly formed addresses, contribute to lower success rates when geocoding VTRS address information. Address

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<sup>2</sup> The boat population is defined as those vessels that are normally kept and used in the area.

<sup>3</sup> DHSMV policy for handling data requests is to distribute a version of the VTRS dataset—the ‘Data Sales Database’—that contains a subset of the attributes (fields) recorded for each vessel and its owner.

information contained on vessel registration renewal forms is keyed into a series of VTRS data fields: street address, apartment number, city, state, ZIP5, and ZIP4. The street address field contains several address elements that are important inputs to the geocode process. These include house number, prefix direction, street name, street type, and suffix direction.

**Recommendation 2a:** Create separate data fields in the VTRS to store the elements that are currently placed in the street address field. Additionally, the DHSMV should implement procedures to standardize address information to meet U.S. Postal Service Coding Accuracy Support System (CASS) standards and should distribute that information as a component of the ‘Data Sales Database.’ Considerable duplication of effort (i.e., unnecessary expenditure of public money) occurs when separate government entities, such as state research institutions, need to standardize the same VTRS information when satisfying their respective public mandates. If address information submitted by boat owners were entered into the VTRS in a standardized format (e.g., CASS) before distribution by the DHSMV, considerable cost savings to the State would be achieved.

**Recommendation 2b:** Implement standard database error-checking procedures at the point of data entry.<sup>4</sup> Input masks restrict the way that data is keyed into a field so that, for example, ZIP codes or vessel registration numbers would be entered in a standard format. A data validation rule checks information as it is keyed to ensure that it conforms to the rule; if it does not, the user is prompted to provide the correct information. Validation rules could be used to ensure that individual address elements mutually validate each other; to ensure, for example, that street name, city, and ZIP code correspond to each other, or to verify that keyed house numbers conform to existing street address ranges. Validation rules also could be used to address the limitless variations in the spelling of vessel manufacturer names found within the VTRS. These, and other misspellings, impede linking the VTRS with BUC<sup>5</sup> and other national boat indexing systems and marine internet databases from which physical specifications can be derived for research and management needs. Finally, lookup tables can reduce data errors and speed-up data entry by providing pre-defined choices for certain fields.

**Issue 3:** A boat owner who changes addresses is required to provide the State with the new address and to check the ‘Address Correction’ box on the decal renewal form. If the box is not checked, the new address will not be recorded in the VTRS.

**Recommendation 3a:** To eliminate this error source, the check box on the renewal form should be eliminated and the data entry technician should verify that the address on the renewal form conforms to the address currently in the VTRS.

**Recommendation 3b:** The DHSMV could institute policies, such as reduced renewal fees, to encourage on-line (Web) registration of vessels (and vehicles). Savings in data entry costs (i.e., time and money) would likely offset any revenue losses. Furthermore, the data entry procedures discussed above could be incorporated, which would further reduce costs and error sources.

**Issue 4:** The Lee County and Manatee County study areas include a large number of condominiums and apartments. In many instances, residential units can only be differentiated by an apartment (condominium) number, since the remaining address elements are identical. The

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<sup>4</sup> A number of entities are involved in entering vessel registration information, including the DHSMV, county tax assessor offices, and private firms that have been contracted to provide the service.

<sup>5</sup> A Web-based marine marketing and listing software.

apartment (condominium) number is required to assign a vessel to the correct residential unit (owner) when using parcel data as reference.

**Recommendation 4:** Enhance existing geocoding algorithms and reference data sources to increase geocode success rates and location accuracy. Altering existing geocoding algorithms to account for apartment (condominium) numbers would help resolve this issue.

**Issue 5:** The study demonstrates that geocoding VTRS records based on parcel reference data will more accurately locate vessel positions than will street reference data. Furthermore, parcel data carries additional information (e.g., owner names) that can be used to corroborate the reliability and suitability of a geocode.

**Recommendation 5a:** Develop hybrid (enhanced) geocoding algorithms that use the additional information to more reliably and accurately assign VTRS records to parcels.

**Recommendation 5b:** Develop a statewide, comprehensive parcel dataset to greatly enhance the geocode process. The parcel dataset should be developed so that it conforms to the requirements of existing or enhanced (Recommendation 5a) geocoding algorithms. Tasks involved would include (among others) the standardization and parsing of address elements and the creation of lookup (alias) tables to account for address elements with multiple variations (e.g., street names or prefix and suffix). Furthermore, peculiarities or differences in the format of addresses that are unique to particular geographic areas (e.g., Manatee County) should be accounted for during the geocode process. The development of an appropriate parcel dataset and hybrid (enhanced) geocode algorithms to process each unique case would entail an initial investment of time and resources (e.g., programming). Once completed, however, only periodic maintenance would be necessary to account for changes in the community that affect the underlying data and algorithms (e.g., future residential development and street naming conventions).

**Issue 6:** There is a need to develop a standardized typology/hierarchy of vessel types based on usage or other criteria.

**Recommendation 6:** Develop a standardized typology to enable comparison between databases and/or research studies. Once developed, the typology should be incorporated into the vessel type and vessel use categories on the VTRS renewal form. Examples of meaningful recreational boat categories include row, day sail, cruise sail, race sail, speed, fish, or cabin cruiser (this list is not meant to be exhaustive).

**Issue 7:** Vessel draft is vital for a number of applications, such as national security, disaster preparedness, and waterway planning and management. Currently, entry of vessel draft on the renewal form or in the VTRS is voluntary.

**Recommendation 7:** Given its importance, draft should be a mandatory field for all vessels, regardless of length.<sup>6</sup> Additionally, an operational definition of vessel draft is needed—hull versus engine draft; engine up or down; sail (fixed keel, centerboard) (up/down); power (idle, plane).

**Issue 8:** The hull identification code (HIN)<sup>7</sup> is required by law and is contained in the VTRS. The first three letters of the hull identification code contain the vessel manufacturer code.

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<sup>6</sup> The VTRS registration renewal form requests draft for vessels 26 feet or greater in length and for all sailboats.

<sup>7</sup> Federal law requires all boats manufactured or imported on or after 1 November 1972 to bear a HIN. The HIN is a 12-character serial number that uniquely identifies a boat.

Using this information to determine the boat manufacturer can be problematic, as the code doesn't necessarily correspond to the correct manufacturer. (For instance, WPI stands for Williams, the assets of which were acquired by Fiesta, FVP. During the study, a VTRS record with a manufacturer code of WPI matched a 20-foot Fiesta OWC vessel.) Thus, using the HIN can lead to the incorrect assignment of vessel manufacturer.

**Recommendation 8:** Incorporate additional VTRS fields to provide for entry of more detailed information on vessel make and model. This would permit linkage to third party (e.g., industry) datasets to obtain, or verify, vessel characteristics, such as draft. An intriguing possibility offered by a workshop participant is to modify the HIN so that it contains additional information (e.g., draft, make, and model).

**Issue 9:** A need exists for improved accessibility to VTRS data, including the ability to make special requests (e.g., historical data) and to perform expeditious database inquiries.

**Recommendation 9a:** Provide on-line Web access to VTRS information. If the DHSMV is unable to institute this solution, it is recommended that a third party entity, such as Florida Sea Grant or the Florida Fish and Wildlife Conservation Commission, establish an agreement with the DHSMV to provide an access point to vessel information.

**Recommendation 9b:** Explore potential linkages to third-party databases in order to provide for information not contained within the VTRS. Commercial databases (e.g., BUC, ABOS, Boats.com) often have detailed vessel information that may be accessed by linking to key fields contained within the VTRS.

**Issue 10:** Florida law requires only motorized vessels to be registered, which does not provide a complete accounting of all boats that use Florida waterways. This incomplete picture of the boating population impedes planning and management efforts. Furthermore, all vessels require the services of law enforcement officers and registration monies returned to counties can be used to enhance facilities used by all categories of boats ([www.boating.org](http://www.boating.org)).

**Recommendation 10:** Require registration of all types of vessels, motorized and non-motorized.

While this study has focused on the VTRS, it is important to recognize that strategies are needed to quantify and categorize vessel populations that are not captured by the VTRS. These sub-populations may include documented vessels, foreign registered vessels, and out-of-state vessels that are used on Florida's waterways.

In conclusion, the study has demonstrated that the VTRS is a reliable and valuable source of information that can be used to map boat locations and their characteristics. Moreover, numerous recommendations have been presented that, if implemented, will lead to improvements in the quality and utility of VTRS information. To implement the recommendations, the collaborative efforts of a wide range of organizations will be necessary. The workshops held in support of this study served to identify individuals and organizations throughout the state that would support and benefit from VTRS enhancements. A final recommendation is to marshal this statewide coalition to develop and implement a strategy that endorses and promotes the transformation of the VTRS into a tool that will serve vital needs in areas such as law enforcement, tax collection, homeland security, resource management, and tourism, as well as other interests in the private sector (e.g., marine industry).







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