

## Diversifying Access to Urban Refuges through Alternative Transportation at Merritt Island National Wildlife Refuge

April 2014



*This document was prepared for Federal Transit Administration by the  
Paul S. Sarbanes Transit in Parks Technical Assistance Center.*

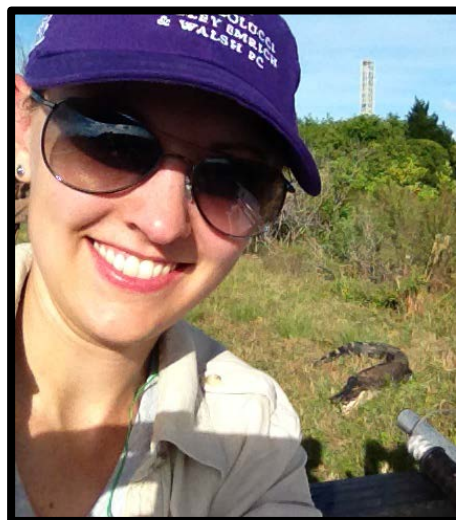
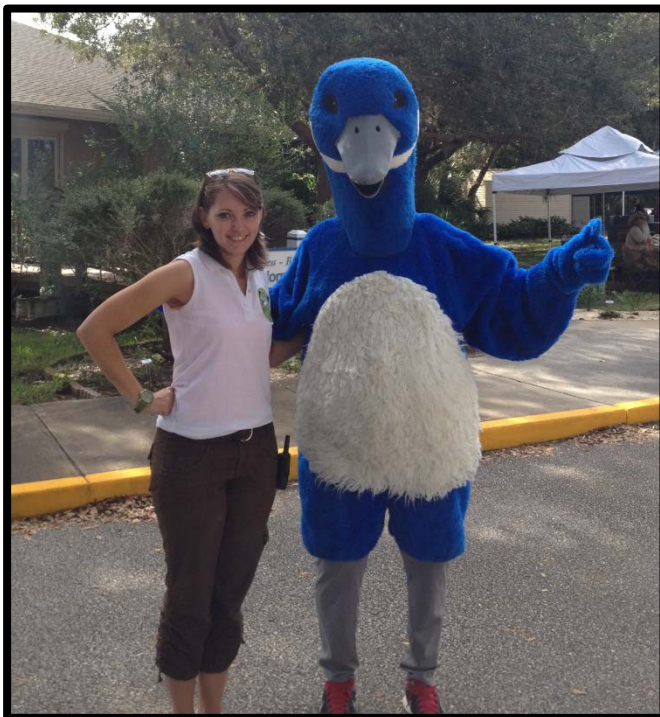
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*To a wonderful nine months at Merritt Island – a place full of history,  
beautiful vistas, and a space for wildlife.*



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*Note: Two formal documents were produced as a part of the scholar’s assignment.*

- 1) Merritt Island National Wildlife Refuge Transit Planning Study*
- 2) Merritt Island National Wildlife Refuge Road Safety Audit Report*

*The formal reports provide more detail on the issues addressed and recommended solutions. This final report provides a summary of each formal report and the reader is encouraged to refer to the formal reports for more information.*

*At the time of this final report’s publishing, the two formal reports were not finalized and therefore, they will be added as appendices post-publishing.*

## **Abstract**

Merritt Island National Wildlife Refuge in Titusville, Florida annually attracts 1 million birders, anglers, and photographers to its diverse, globally renowned estuaries. With 94% of its visitors reaching the Refuge via a private vehicle, providing alternative transportation to and throughout the Refuge to improve accessibility is the project focus of the 2013 public lands transportation scholar, Elisa Kropat, assigned to the Refuge. A transit planning study addresses expanding the Refuge's transit based tour system to reach new and diverse visitors by offering a variety of tour programs and extending service into the local community. The study's goal is to diversify the Refuge's visitor based by providing transportation to those without access to a private vehicle. Additionally, with the development of numerous regional bicycle paths, countermeasures recommended under the road safety audit conducted will equip the Refuge with planning tools to provide for safe bicycle access to and throughout the Refuge.

## Introduction

Merritt Island National Wildlife Refuge (the Refuge or Merritt Island) is located on a barrier island along Florida's eastern seaboard, less than three miles from the City of Titusville's downtown historic district. While the Refuge is near an urban area, the Indian River Lagoon that separates it from the mainland makes it feel slightly isolated. Its proximity to Titusville is convenient for local residents; however, since it is an isolated destination, with some exceptions, purposeful trips must be made to visit the Refuge. Merritt Island embodies common characteristics of urban refuges such as high individual vehicle visitation and public transportation accessibility issues which often affect underserved populations. Additionally, the Refuge also suffers from a lack of connectivity and local awareness. With an average annual visitation of roughly one million visitors, it is one of the Nation's most visited refuges. From a U.S. Fish and Wildlife Service report, *Banking on Nature*, out of 92 refuges sampled nationwide, Merritt Island has the third highest annual visitation. According to a visitor survey conducted by the U.S. Geological Survey in 2010/2011, 63 percent of Merritt Island's visitors traveled more than 50 miles to visit the Refuge and 50 percent of visitors come from out of state, indicating that a majority of visitors are not local. Based on those two statistics, it is possible to infer that only a small percentage of visitors may come from a radius of ten to fifteen miles.

Although the refuge has significant annual visitation, it has transportation accessibility issues that essentially limit accessibility to privately operated vehicles. The Refuge suffers from a lack of access to transit, preventing those without ready access to vehicles from easily accessing the refuge. Additionally, the Refuge lacks adequate bicycle facilities and bicycle connectivity further limiting access via non-motorized modes such as bicycling.

### *Access to Transit*

Merritt Island is an expansive refuge with 260 miles of paved, gravel, and dirt roads. The Refuge staff manages 140,000 acres of land and water with only a portion open to the public (The remaining acreage is within Kennedy Space Center's secure zone. These lands are managed by the Refuge but are not open to the general public.) Twenty miles separate the Refuge's two entrances. The significant distances and quantity of public use infrastructure poses challenges when providing visitor services programs and general management of the Refuge. To reach the Refuge and experience most of its visitor amenities, a personal vehicle is necessary.

According to the 2010/2011 visitor survey, the average Refuge visitor is 60 years old, white, with a college or graduate school education, and an annual income of \$50,000 to \$75,000. This type of visitor typically has the financial means to travel, they may previously enjoy wildlife and recreational activities, and they most likely have visited other refuges or National Park System sites. The Refuge management would like to expand and diversify its visitor base to not only serve the present "average visitor" but to serve presently underserved populations. For example, the Refuge would like to reach younger populations, minority groups, and those without ready access to a vehicle. The region, including Brevard County (where the Refuge is located) and the near-by Orlando metropolitan area, is a significant tourist destination with a focus on nature based tourism. By improving access and visitor amenities, the Refuge could expand upon its visitor base and positively impact the regional economic status.



To address these goals, the scope of work for the public lands transportation scholar includes identifying opportunities for expanded transit service between the City of Titusville, the Refuge Visitor Information Center, and other visitor use areas. Opportunities will provide transit based tour service in the short term or long term and may include defining potential transit markets, conceptualizing service scenarios, and developing routing and service concepts for long-term operations.

### ***Access to Bicycle Facilities***

Providing adequate bicycle access can building upon increased transit access and overall Refuge accessibility. To attract tourists and provide amenities for local residents, there are regional and state efforts to develop and build bicycle paths which connect existing paths to proposed paths within the refuge. Examples are described below:

- Titusville to Edgewater Trail (Local): The Florida Department of Transportation and the Space Coast Transportation Planning Organization are in the planning phases of a 60 mile bicycle trail that would connect the City of Titusville to the City of Edgewater with 22 miles of the alignment through the Refuge.
- Eco-Heritage Trail (Local): In 2012, the Titusville Environmental Commission published an *Eco-Heritage Trails and Bike Path Plan* proposing a bike-able loop through the City of Titusville connecting 25 heritage sites that are of ecological, historical or cultural significance including the Refuge.
- East Coast Regional Rail Trail (Regional): The Florida Department of Transportation is in the planning phases of a 45 mile multi-use trail along that will serve as a final leg of the state wide coast to coast bike trail terminating in the City of Titusville. Ground breaking for the Titusville segment occurred in October of 2013.
- Coast to Coast (State wide): This Florida State sponsored project will close the gaps in a 275 mile trail connecting Florida's western coast in St. Petersburg to its eastern coast in Titusville and ultimately the Refuge and Seashore. The East Coast Regional Rail Trail and part of the Titusville to Edgewater Trail are proposed trails to closed identified gaps in the Coast-to-Coast Trail.

Of the listed examples, the Titusville to Edgewater Trail has the potential to increase bicycling activity on the Refuge where currently there are limited bicycling facilities. Prevailing bicycle planning on the Refuge is focused on this trail. Currently, the Refuge generally allows bicycling however there are no designated bicycling trails. The Refuge's long term *Comprehensive Conservation Plan* includes establishment of bike paths to further the support their mission of wildlife observation. The Edgewater Trail may become the first developed bike path within the Refuge.

The scope of work for the transportation scholar includes assisting with efforts to increase safe bicycle access to the Refuge via connections to regional bicycle trails and to evaluate Refuge roads for long-term concepts to provide safe bicycle access through the Refuge. (See Appendix A for a copy of the scholar's statement of work.)



## Methodology

To achieve the stated goals of the transportation scholar's assignment at Merritt Island a multifaceted approach was used to understand the transportation challenges and provide solutions that will be mutually acceptable to all stakeholders. Methods included: holding conversation with regional stakeholders, analyzing the Refuge's current visitation data, observing visitation at key visitor use areas, conducting delay and travel time studies on Black Point Wildlife Drive, conducting a road safety audit, and collecting information about the Refuge's current tour system.

### *Holding Stakeholder Conversations*

Numerous conversations were held with a variety of regional stakeholders to better understand the region and gain support for an expansion of transit service at Merritt Island. Stakeholders met with included:

- Canaveral National Seashore
- Kennedy Space Center Master Planning Department
- Kennedy Space Center Visitor Complex (managed by Delaware North)
- City of Titusville Planning Department
- Titusville Chamber of Commerce
- Space Coast Transportation Planning Organization
- Brevard County Tourism Development Council
- Space Coast Area Transit Authority
- Port of Canaveral

Discussions led to an understanding of the economic and tourism structure for the region and the potential partnerships for transit based service. For example, the Port of Canaveral is the second largest passenger cruise terminal in the nation attracting 138 port of call cruises annually. A variety of tours, nature-based and otherwise, have existing partnerships with the Port to provide daily excursions and transportation for cruise passenger either pre departure, post departure, or mid-cruise. While the Port has a larger number of visitors that may be interested in visiting the Refuge, due to the distance between the Port and the Refuge, as well as other factors, it was concluded from conversations with the Port that the Port may not be the best point of regional significance to reach out to a new visitor group.

The stakeholders were also invited to join a working group to which periodic updates and inquiries for inputs were sent to group members. This allowed for continuous conversation regarding regional tourism, expanded transit at the Refuge, and review from local stakeholders to ensure the study was appropriately capturing regional interest.

### *Analyzing Current Visitation Data*

Merritt Island has pre-established methods to count visitors through automatic and manual means. The existing visitor count data was analyzed to determine peak use of the Refuge including: daily peak, weekly peak, and seasonal peak periods. A summary of available counts and types is available in Table 1.

**Table 1 - Vehicle and Visitor Counting Methods**

Visitor Use Area	Counts	Type	Notes
Bair's Cove Boat Ramp	Boats	Automatic	Counts daily sums
Bair's Cove Recreational Area	Vehicles	Automatic	Counts daily sums
Beacon 42 Boat Ramp	Boats	Automatic	Continual counter; counts recorded monthly
Biolab Boat Ramp	Boats	Automatic	Counts daily sums
Biolab Road	Vehicles	Automatic	Counts daily sums
Black Point Wildlife Drive	Vehicles	Automatic	Counts daily sums
Hammock Trails Parking Lot	Vehicles	Automatic	Continual counter; counts recorded monthly
Manatee Observation Deck	Vehicles	Automatic	Counts daily sums
Visitor Information Center	People	Manual	Daily sums recorded by volunteers

### *Conducting Observational Surveys at Key Visitor Use Areas*

Observational surveys were conducted to understand the types of visitors at specific visitor areas. Results were used to link audience-targeted tour types with specific visitor use areas during the development of short-term transit alternatives. Locations were selected based on Refuge staff input on possible tour stops. Visitor group characteristics recorded include:

- Type of visitor group such as family, adult couple, or senior couple
- Size of visitor group
- Any extra equipment or belongings such as a camera, stroller, or pets
- Average length of stay
- Apparent purpose such as photography, wildlife observation, or hiking

During the observational surveys parking lot usage information was obtained. The number of parked cars was recorded in fifteen minute intervals to determine the turn-over rate. General observations were recorded regarding how visitors parked, for example, if visitors adhered to the parking structure, parked in designated spots, or if there were unusable parking spots. These observations aid in considering the interaction of larger vehicles used in a transit based tour system with other vehicles.

Any observed mobility issues of visitors were noted to consider in the development of transit options.

### *Conducting Delay and Travel Time Studies on Black Point Wildlife Drive*

To further assess congestion beyond the daily vehicle counts, travel time and delay studies were conducted on Black Point Wildlife Drive (Black Point), the Refuge's primary auto-touring route and its most popular amenity. During the Refuge's peak season, December through March, Black Point experiences congestion issues. Vehicles frequently stop to observe or photograph wildlife along the one-way, narrow dike road either fully or partially blocking the travel way. The width of the road does not always accommodate passing vehicles resulting in back-ups. Additionally, there are soft-shoulders and steep slopes or water on either side of the roadway that make it uncomfortable and

tedious for drivers to pass. This can lead to platooning, forcing drivers to follow at the pace of others and possibly resulting in a negative visitor experience.

With a single entry and exit point along the seven mile drive, using a license plate study was effective in determining a visitor's length of stay. The travel time and delay studies occurred during the Refuge's peak of the peak period in January.

### ***Leading the Refuge in a Road Prioritization Exercise***

The scholar and the Volpe team led Refuge staff through a road prioritization exercise. The purpose of the exercise was to prioritize maintenance of roads and determine which roads would continue to be available for visitor use, whether that would be through transit tours only or a combination of transit and private vehicles. Current refuge resources are unable to maintain all roads properly resulting in pot hole ridden dikes that not only effect visitor experience but impact the staff's ability to perform their duties. The exercise focused solely on public roads (as opposed to administrative roads) and the results are intended guide the staff in resource allocation as well as focus the scope of the transit study.

### ***Collecting Currently Bus Tours Data***

The volunteer tour operators were asked to fill out a post-tour information sheet after each tour given. Results were used to better understand how the current Refuge transit vehicle (a 14 passenger bus) is being used and how the tours are being conducted to guide the development of transit alternatives. Results also established a baseline for measuring the effectiveness of transit in meeting Refuge goals. The following information was recorded:

- Driver name
- Date of tour
- Departure and return time
- Number of passengers
- Beginning and ending mileage
- Tour title, general route and stop, locations
- Approximate duration of each stop

### ***Conducting a Bicycle and Pedestrian Road Safety Audit***

A bicycle and pedestrian road safety audit was conducted on the Refuge, with assistance from the Paul S. Sarbanes Transit in Parks Technical Assistance Center and the Federal Highway Administration Eastern Federal Lands Highway. With the increase in bicycle facilities in the region and the Refuge's desire to provide adequate bicycling facilities, it is beneficial to understand current road user conflicts and plan for foreseeable conflicts. Refuge staff including Refuge law enforcement as well as Kennedy Space Center law enforcement expressed numerous safety concerns on the roads, especially for bicycles. The audit assessed current conflicts for all road users and review proposed bicycle paths including crossings and provided recommended countermeasures to address noted safety concerns.

### ***Developing and Implementing a Bus Driver Training***

The Refuge owns a 14-passenger bus for operating tours. Tours are conducted by volunteer drivers and scheduled two to four times a week with *A Beginning Birding Tour* being the most frequently offered tour. The program had much flexibility and freedom with drivers generally developing their own interpretation and route. Due to a minor incident that occurred during a tour, the Refuge management staff suspended all public tours until a formal program and training for the drivers was developed; tours were suspended at the time of the scholar's arrival to the Refuge. In order to re-establish tours and assist with the transit planning study, the scholar worked closely with the Refuge staff to develop and implement a bus operator training program. The training program focused on adding structure and safety to the Refuge's tour operations. The scholar worked with the staff to develop the Refuge's policy on the tour program and training, a bus operator's specific agreement each driver must sign, qualifications and responsibilities of each driver, and day-of-tour and emergency procedures. See Appendix F for a copy of the training booklet.

## Constituencies

Transportation planning for Federal lands very much impacts the public and greatly benefits from the consideration of stakeholder groups. Constituent groups that played a role in Merritt Island's transportation scholar's assignment include Refuge visitors, employees of Kennedy Space Center, local city or county residents, and regional tourists. The groups listed are either types of audiences the transit study focused on or Refuge users that would be impacted by expanded transit service or an increase in bicycling activity on the Refuge.

### *Merritt Island NWR Visitors*

Refuge visitors such as birders, anglers, and photographers, will be most impacted and potentially the most benefitted by improving Refuge accessibility. The transit study is focused on reaching new visitors without alienating current visitors. While some current visitor groups will benefit from an expanded transit based tour service, other visitor groups may not benefit and an expanded service may even negatively affect their visitor experience. Photographers and anglers are not expected to use the transit system due to the equipment involved and the solitary nature of the activity. In fact, alternatives proposed through the transit study may impact the ability for these visitor groups to satisfactorily participate in their desired recreational activities. It is important that all alternatives take into account the impact they will have on existing visitors while weighing the benefit to expand the visitor base.

Outcomes of the road safety audit are intended to improve and expand visitor amenities. While cyclists currently ride on the main roads without a shoulder, improving the roadways and providing safe access to cyclists will ultimately provide a better experience for this type of visitor. Additionally, the ease of access by cyclists may increase the number of visitors who may have otherwise gone elsewhere for this experience.

### *Kennedy Space Center Employees*

Kennedy Space Center employees are a primary road user of the Refuge's main roads (primarily State Route 402 and State Route 3) and travel through the Refuge to commute to the Space Center. The employee-only gate located in public use area of the Refuge is one of three gates the 8,000 Kennedy Space Center employees may use. High commuting times are Monday through Friday from 6:00AM-9:00AM and 3:00PM-6:00PM. The Space Center employees have different driving behaviors than a typical Refuge visitor. They tend to drive faster than Refuge visitors who may be unfamiliar with the roads or observing wildlife which creates a high speed differential among road users, a safety concern identified by the Road safety audit team. Recommended traffic calming and speed reduction measures through the audit consider the driving behaviors of Kennedy Space Center employees as well as other operational needs of the Space Center.

### ***City of Titusville Residents***

The approximately 44,000 residents of Titusville are the potential visitor group with the closest access to the Refuge (approximately five miles from the refuge). This group may initiate or increase visitation through new transit tour opportunities or bicycle access from downtown Titusville. Some residents may be interested in connecting to Refuge transit via walking or biking on the A. Max Brewer Memorial Parkway Bridge, which terminates at the southern Refuge entrance. Titusville residents are one area of opportunity to diversify visitors through partnerships with proximate school and community groups.

### ***Brevard and Volusia County Residents***

Refuge staff estimates that the majority of Brevard and Volusia County<sup>1</sup> residents have never visited the Refuge. New interpretive experiences and access opportunities offered through transit tours or bicycling paths may attract new visitors from these areas. Brevard and Volusia Counties both contain significant underserved populations, including Latinos, African-Americans, and persons living below the poverty line<sup>2</sup>. Along with the residents of Titusville these populations represent opportunities to attract new types of visitors to the Refuge and engage a wider audience in the Fish and Wildlife Service's conservation mission. Transit is one potential entry point for underserved communities to access the Refuge, especially through partnerships with community groups.

### ***Regional Tourists***

A small number of international and U.S. tourists arrive to the Space Coast via bus or shuttle while the majority drive, fly and then drive, or arrive by cruise ship. Although international visitors are very small in number, they may be accustomed to transit use and may be seeking car free opportunities. A significant number of tourists arrive via cruise ship through the Port of Canaveral, the second largest passenger cruise terminal in the country, seeing 3.7 million passengers annually. Opportunities for tourism occur pre or post departure and mid-cruise. For successful attraction, transportation may be needed for cruise passengers.

The largest group of tourists comes to the Space Coast via private vehicle and represents significant potential visitor opportunities without an immediate need for transit. Major attractions in the area include the Kenned Space Center Visitor Complex that sees 1.5 million visitors annually and local beaches such as Cocoa and Satellite Beaches. Some of these visitors take day trips from Orlando, while others stay at hotels, typically near Cocoa Beach or Daytona Beach, and have their own vehicles. Some of these visitors may be interested in Refuge tours but would require significant marketing to gain their interest.

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<sup>1</sup> Most of the Refuge is located within Brevard County, only with its northern tip in Volusia County. An entrance to the Refuge is located in each county.

<sup>2</sup> As of the 2010 Census, Brevard County had approximately 57,000 African-Americans (10.5 percent of the total population), 48,000 Latino residents (8.8 percent), and 68,000 people living below the poverty line (12.5 percent). Volusia County had approximately 54,400 African-Americans (11 percent of the total population), 58,400 Latino residents (11.8 percent), and 80,000 people living below the poverty line (15 percent). Accessed 23 December 2013: <http://quickfacts.census.gov/qfd/states/12/12009.html> and <http://quickfacts.census.gov/qfd/states/12/12127.html>.

## Recommendations

The area, locally and regionally, has great potential and many positive characteristics to support an expanded visitor services system, transit, and bicycle access. Merritt Island is connected to the mainland and the City of Titusville by a multi-modal bridge constructed in 2006. The posted speed limit on the bridge is 30 mph with shoulders wide enough, although unmarked, for bicycling, and a divided walkway for walkers or joggers. This bridge is highly used by locals for exercise and recreation purposes. City parks are located on both landsides of the bridge that attract people for fishing, kayaking, boating, jogging, and other recreational activities. These city services already bring people to the Refuge's door step.

Titusville has an attractive, pedestrian friendly, and growing historic downtown area. Shops, restaurants, City government services, a local playhouse, and parks bring residents and tourists to downtown Titusville.

Brevard County is marketed as a tourist destination attracting day or weekend excursions for the millions of tourists at Disney World and residents of Orlando, for cruise ships at Port Canaveral, and as vacation spots for people nationwide and worldwide for its beaches, Kennedy Space Center's Visitor Complex, and other nature and eco-based recreation. The high tourist visitation occurs in the more developed southern part of the county; Cocoa, Viera, and Melbourne.

The region's attractive qualities provide a highly potential visitor market for the Refuge. Recommendations for the transit study and improved bicycle facilities focused on not only the local residents but also the local tourism industry.

Detailed recommendations for transit service and bicycle access are outlined in separate reports drafted during the scholar's tenure. A summary of the recommendations in each report is provided in the following sub-sections.

### ***Transit Planning Study***

The Refuge is very large, with many amenities in isolated areas. Any established transit service should not offer an on-and-off service but one with established tour routes only. The Refuge staff would like to concentrate visitor uses as much as possible in order to reduce the resource demand and degradation of its infrastructure. Proposed transit services should help with designating a few routes and areas that can be maintained and enforced for concentrated visitor use.

A limited staff capacity is a study constraint of any future expanded service. Suggested alternatives for an expanded transit based tour system, for the short term or the long term, should include recommendations that do not require a significant increase in staffing needs. The transit system must be operated by volunteers, partners, or a concession. If a concessionaire operates a transit system, it must be financially self-sustaining. Long-term transit alternatives should identify long-term needs from Refuge staff (for managing transit system) and establish a way to build or fund capacity.



Three goals were established at the on-set of the transit planning study.

1. Develop a transportation system that supports sustainable management practices at the Refuge, including reducing congestion to uphold the Refuge's resource conservation purpose.
2. Expand access opportunities to the Refuge through multimodal transportation options for a diverse group of current and potential visitors.
3. Improve connectivity between the Refuge and the surrounding region.

To address the study's goals, the transit planning study is divided into two parts: short term and long term recommendations.

### **Short Term Transit Plan**

The short-term transit plan recommendations focused on improving transit tours within a five year period without major increases in capital expenditures or staff resources. They better align the Refuge's tour system with its visitor services priorities while using existing resources. The Refuge currently utilizes one 14-passenger vehicle to conduct regular transit tours operated by volunteer drivers. Refuge staff report that tours are in high demand and regularly fill to capacity, and volunteers report positive feedback from visitors. Additionally, staff reports that the system is highly flexible to accommodate volunteer and visitor interest.

Though the current system is well-regarded, the study team observed the following potential opportunities to improve existing transit tours:

- Transit tours do not follow a defined program or script, nor do the tour guides deliver interpretation that aligns with the priorities of the visitor services program.
- There are no set routes, and Refuge staff do not know beforehand which roads the bus will travel during a tour.
- There is no reliable way for Refuge staff to communicate with tour drivers during the tour.
- While overall operating costs are very low, the Refuge has not been formally tracking these costs or anticipating future expenses.
- Visitors who take tours are fairly homogenous and representative of the average Refuge visitor; there is an opportunity to increase the diversity of visitation through partnerships and outreach.

Based on the potential opportunities, the following actions are recommended to expand Merritt Island's transit based tour system.

1. Outline Refuge programming priorities to assist in developing new programs and an interpretation curriculum.
2. Strategically develop program types that can align tour themes with visitor services priorities. New program types could vary in objectives, interpretive content, and duration allowing the Refuge to expand its visitor base and further its visitor services priorities.
3. Develop a formal interpretation program to ensure all interpretive and public use programs are directly tied to Refuge management priorities. This tie will allow the Refuge to control its

messages to the visiting public and to diversify the current visitor services program through public programs that highlight the Refuge's multiple and unique purposes.

4. Assess effectiveness and visitor satisfaction of current public programs including developing performance measures /metrics and methods to gather information from the public<sup>3</sup> prior to expanding and formalizing public programs. Measures for effectiveness and visitor satisfaction should consider that current demand may be more related to the education and interpretation components of the existing public programs than to the quality of transportation services.
5. Assess current capacity of the Refuge to achieve curriculum development, including program types and a formal interpretation program, and determine outside resources to provide adequate capacity and develop a curriculum. Potential resources could include grant money, interns, and partnering with the Seashore. Actions include applying for grants, hiring and overseeing interns, and contacting the Seashore.
6. Establish a fix set of routes with corresponding programs to address expressed safety concerns of not knowing where the bus is located at any point during a tour and prevent tours from using roads that cannot structurally support a larger vehicle. To maintain the flexibility of the program, establish a protocol for volunteer drivers to select from the list of approved routes or temporarily vary from a fixed route (such as to accommodate wildlife presence) and communicate selected route with Refuge staff or Visitor Information Center volunteers.
7. Vary the current tour schedule to provide expanded service and diversify the visitor base. Solely varying start times and program types can maintain the tour program's current frequency (at four tours per week during the peak season) while attracting new visitors. If capacity and resource permit, the Refuge may also consider increasing the number of tours given weekly. Consider the following when deciding to increase tour service:
  - Demand for current transit tours, as measured by number of visitors that sign up for tours
  - Availability of volunteer drivers
  - Development of curriculum for one or more program types
  - Refuge staff capacity to oversee driver training and tour scheduling
  - Marketing efforts to advertise tours (may be done in conjunction with local partners)

Discuss the Refuge's visitor services program priorities and how to reflect them in the tour program prior to each tour season. To maintain flexibility set weekly schedules for one month periods. If considering external destinations in the tour schedule, outreach to partners in advance of the tour season to solicit interest.

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<sup>3</sup> Additionally, FWS must comply with the Paperwork Reduction Act and have any visitor surveys approved through the Office of Management and Budget.

8. Research potential funding sources and partnership opportunities to offset the increased in cost of an expanded tour system<sup>4</sup>. Suggestions include:
  - Increasing ride fee from \$3 to \$5 per person
  - Federal/private grants
  - Funding sources or in-kind support from local partners
  - Additional fees for tours that include external destinations
  - Reducing or removing the fee exemption to MIWA (friends group) members
  - Lowering the age of children exempt from paying the fee
9. Refine and prioritize Refuge short-term personnel capacity needs, including transit capacity needs, and match needs to existing and potential capacity. The short-term transit plan recommends improvements to and expansions of its public use transit-based programs, which may demand increased capacity and resources of Refuge management staff to develop and implement these programs.
10. Develop a marketing strategy including marketing messages and ground rules to help the Refuge meet its goal of expanding access to new visitors. Refuge staff should develop key messages about the Refuge and about transit tours to share with partners. This can include interpretive and environmental education messages, as well as logistical tour details. Ground rules may include types of outreach or messages that would be inappropriate to include. The marketing strategy may be led by the Refuge or a local stakeholder (or group of stakeholders) using the messages and ground rules established by Refuge staff. The strategy can be very simple, but it should outline roles, materials, schedules, and costs for marketing.

Several local and regional stakeholders, including the Titusville Chamber of Commerce and the Brevard Tourism Development Commission, expressed the desire for a broader marketing effort for the Refuge and also offered to support the effort through their own resources and relationships. The Refuge should maintain control of the messages broadcast to the visiting public, and therefore it can work closely with its stakeholders to develop a simple marketing strategy for transit tours in the short term.

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<sup>4</sup> The Merritt Island Transit Planning Study Report includes a cost analysis section on the cost of the current tour system as well as an increased system to help with Refuge for planning purposes.

## Long-Term Transit Plan

Long-term alternatives and actions for an expanded transit based tour system at Merritt Island are currently in the development stages<sup>5</sup> but primarily involve transit operations on their primary auto-touring route, Black Point Wildlife Drive. All three scenarios would include:

- High-level cost analysis
- Refuge staffing needs
- Partnership potential
- List of prioritized projects with cost estimates and how well they meet evaluation criteria
- Timeline / interim steps to complete

Specific recommendations have not been finalized but three *possible* scenarios are under consideration and described below.

1. Formalize the existing transit system with set routes and program types. Also consider expanding the existing transit system through frequency or number of vehicles according to demand and Refuge capacity. This would be a no change or low investment scenario. A step-down plan for this scenario would include priority routes and destinations to maintain for transit and concentrated visitation and the possibility of add more pullouts along the drive.
2. Establish mandatory transit on Black Point Wildlife Drive during the peak season and high use times. This scenario would require a high frequency tour operation and a strong interpretive message set by the Refuge. Further analysis for this scenario would include determining staging areas for transit vehicles and visitor boarding and alighting, possible business models, and recommendations on appropriate transit vehicles. To assist the Refuge in deciding if and when to employ mandatory transit on Black Point, the study would also determine a trigger point for switching to mandatory transit to maintain visitor experience and safety. From discussions with the Refuge staff, if mandatory transit was instituted on Black Point, the Refuge would prefer to simultaneously develop substitute experiences elsewhere on the Refuge for other users including private vehicles, bikes, and pedestrians.
3. Establish voluntary transit on Black Point Wildlife Drive in conjunction with dispersed visitation. If voluntary transit use on Black Point were to remain, improvements to other amenities (e.g. Peacock's Pocket or Biolab Road) would alleviate congestion on Black Point. The goal would be to encourage dispersed visitation and implement congestion management practices (and enforcement) along Black Point and elsewhere. Further analysis for this scenario would include costs of improvements to other amenities and roads, cost of additional enforcement of driving practices on Refuge roads, any needed improvements to the Visitor Information Center, and analysis of what level of service would reduce congestion on Black Point and what would be the maximum visitor demand for voluntary transit. A drop-down from this scenario may be considering using transit to bring visitors to other parts of the Refuge.

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<sup>5</sup> The transportation scholar collaborated with the Volpe Center on the transit planning study. Volpe Center typically allots 12 months for its grant projects and will finalize the study post the completion of the scholar's nine-month tenure.

### ***Bicycle Safety and Road Safety Audit***

The scholar, with assistant from the scholar's mentor, organized a bicycle and pedestrian Road safety audit at the Refuge in order to assess safety concerns for bicyclists and pedestrians and provide countermeasures to assist the Refuge in planning for improved bicycle facilities. The team included two highway safety engineers from Eastern Federal Lands Highways, a research engineer with bicycle planning experience and a transportation engineer from the Paul S. Sarbanes Transit in the Parks Technical Assistance Center, and a transportation planner from Central Federal Lands Highways.

The scope of the road safety audit is limited to the Refuge's defined primary public use zone; a region of the Refuge where visitor resources are concentrated. The audit focused on four specific areas of the Refuge: 1) main roads, 2) proposed bicycle trails, 3) the Visitor Information Center campus, and 4) Black Point Wildlife Drive. A detailed account of the identified safety concerns and specific counter measures is outlined in the *Merritt Island National Wildlife Refuge Road Safety Audit Final Report*; see Appendix G. A summary of the findings is included below.

The audit team identified the following positive features that promote safety and minimize conflicts:

- An adequate clear zone along main roadways; promotes visibility
- Reflective pavement markers (RPM's) on main roadways; promote visibility of travel ways for drivers especially during poor visibility conditions
- Pavement is in good condition
- Wide, 6" pavement markings and RPM's on State Route 3; promotes visibility of travel lanes
- Pull-off numbering system on Black Point Wildlife Drive; helps with directional guidance
- Proactive in safety measures for non-motorized users; (i.e. conducting the RSA, development of separate right-of-way bike trail, enforcement and repercussions for speeding and other violations)
- The Refuge has a working cooperative relationship with local federal and regional partners and neighboring jurisdictions

To improve general roadway conditions for all road users, the audit team recommends the following.

1. Add shoulders and a Safety Edge to main roadways to address the lack of a recovery area and assist drivers with safely returning to the travel way after losing control of their vehicle.
2. Conduct a signage, pavement marking, and wayfinding plan to improve directional guidance and visibility. Upgrading pavement markings and installing reflective pavement markers may help drivers see the travel way especially during inclement weather and night time conditions. Providing consistent signage including design and language as well as placement may assist visitors with navigating the Refuge.
3. Work with Kennedy Space Center's Protective Services department to conduct an educational safety campaign for employees in an effort to reduce the prevalence of wildlife related incidents and high speeding driving behaviors.

4. Ensure the roadside vegetation is maintained through mowing operations to provide continual visibility for drivers.
5. Review the signal warrant at the intersection of State Route 402 and State Route 3. The volume and traffic flow may no longer warrant a signalized intersection and other intersections, such as a roundabout, may be more suitable.
6. Provide marked crossings where proposed bike trails cross the main roads. Due to a posted speed limit of 55 mph and high speed driving behaviors, consider using traffic calming and speed reduction measures such as speed limit pavement markings, speed feedback signs, or pedestrian activated hybrid beacons.
7. Redevelop the entrance at Titusville to establish a more formal gateway. Review signs placed by the Refuge, the Kennedy Space Center, and Canaveral National Seashore and consider streamlining, consolidating, and providing consistent messaging. Installing a center median in the roadway would provide numerous benefits. It serves as a traffic calming measure keeping vehicle speeds low as they enter the Refuge, provides a pedestrian refuge for trail users crossing between the existing parking lot at the entrance and the proposed bike trail head, and a place for landscape and signage to create a formal entrance causing drivers to realize they are entering the Refuge.
8. Established a pathway ambassador program to create a Refuge presence on the proposed trails. The study recognizes the Refuge's limited law enforcement resources. An established, volunteer based program can provide a Refuge presence on the trail, assist visitors with interpretation and guidance, and monitor and report inappropriate behavior or incidents on the trail.

## Next Steps & Implementations

At the writing of this final report, the road safety audit report is in a review and formal comment stage and the transit planning study is ongoing with an expected completion date in June of 2014. The studies completed during the scholar's assignment are organized to provide step down plans for expanding the Refuge's transit and bicycle access while highlighting any need for additional personnel and/or cost constraints. Both formal reports are to serve as resources for the Refuge guiding the staff in decision making, prioritizing projects, and planning for future accessibility. The Refuge is to refer to the road safety audit report and the transit planning study for detailed steps and implementation measures.

Upon formal documentation of transit and bicycle plans for the Refuge, potential funding sources can be explored to assist with implementing any recommendations. Two possible funding sources are summarized below.

### ***Federal Land Access Program Grant***

The goal of the Federal Land Access Program (FLAP) is to improve state and local transportation facilities that provide access to, are adjacent to, or are located within Federal lands. Strong candidates are Federal lands that are high-use facilities and economic generators and Merritt Island embodies both of those<sup>6</sup>. Grants are awarded through programming decision committees in each state. Recommendations and countermeasures outlined in the road safety audit report may be eligible for a FLAP grant. For example, the planning, engineering, or construction for an improved gateway at the Titusville entrance including facilities for pedestrians and bicycles may be a good candidate. Keep in mind, only state, local, or tribal entities may submit a project application that is supported by the benefitted federal land managed agency facility unit. The City of Titusville may be an appropriate applicant for a project enhancing the Refuge entrance.

- General Information: < <http://www.fhwa.dot.gov/map21/Guidance/guideflap.cfm> >
- Application Information: <[www.efl.fhwa.dot.gov/files/programs/Access-Program-Application.pdf](http://www.efl.fhwa.dot.gov/files/programs/Access-Program-Application.pdf)>

### ***Accelerated Innovation Deployment (AID) Demonstration Grants***

Under this program, funds are available to implement an innovated project related to highway transportation. Funding is currently available and grants are accepted on a rolling basis. Recommendations and countermeasures outlined in the road safety audit report may be eligible for an AID grant. The installation of speed feedback signs as a speed reduction measure in the vicinity of the Visitor Information Center may be an applicable project, however further research would be beneficial. The speed feedback signs are a recommendation the Refuge could implement within a six-month time frame to meet the stipulations of the grant.

- General Information: <<http://www.fhwa.dot.gov/accelerating/grants> >
- Application Process: <<https://federalregister.gov/a/2014-03452>>

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<sup>6</sup> According to the *Banking on Nature* report, Merritt Island National Wildlife Refuge returned \$17.61 for every \$1 dollar appropriated, calculated in 2011 dollars, one of the highest returns in the nation in the study



## Connection to the Wider Transportation Community

The issues facing Merritt Island that the scholar's assignment addresses also are applicable to other refuges, municipalities, or other managed areas. Efforts at Merritt Island can be connected to a larger transportation community addressing Federal nation-wide goals, such as the urban refuge initiative, and regional goals, such as multi-modal mobility.

### *The Urban Refuge Initiative*

In 2012, the U.S. Fish and Wildlife Service published *Conserving the Future: Wildlife Refuges and the Next Generation* that outlines the vision for national wildlife refuges over the next decade. The three part vision is to uphold the highest scientific standards when managing habitats and conserving wildlife for future generations, to foster existing partnerships and create new ones to attract the growing diverse and young American population to the mission of conserving habitat for wildlife, and lastly, to strength the Service's workforce to become leaders in wildlife conservation. Out of this document emerged the *urban refuge initiative* whose goal is to establish an urban presence for the Refuge system through urban community partnerships. These partnerships are to foster wildlife education programs, create employment opportunities for urban youth, and most importantly, give urban populations knowledge of Refuges and the ability to access them.

The recommendations under this project fulfill the nationwide urban refuge initiative by augmenting the Refuge's accessibility. The expanded transit service and improved bicycle access will strength the connection between the City of Titusville and the Refuge providing alternative transportation access for the City's population. The recommendations build upon existing partnerships the Refuge has with local groups such as the Brevard Nature Alliance or Titusville's Downtown Art Gallery that already showcase the Refuge through birding tours or wildlife art exhibits. Recommendations may also create new partnerships with the Titusville Library, the Titusville Towers Senior Center, or Titusville's Municipal Marina through providing transportation and educational opportunities to groups served by those entities. Creating the connection between existing bicycle facilities on the mainland and bicycling facilities on the Refuge will further foster a connection between Merritt Island and the local community, specifically for local bicycling groups.

### *Accessibility through Alternative Modes*

Nationwide, transportation networks are being revitalized using a multi-modal approach. Streets are now designed to be friendly to all users/modes and local governments are working to establish high connectivity in their area not just for private vehicles but for other modes such as transit, bicycling, and pedestrians. The Refuge's desire to provide access via alternative modes in addition to personal vehicles aligns with this national trend as well as regional trends.

With the transit and bicycle improvements, the Refuge will fit in with transportation multi-modal and connectivity goals of Titusville and the region. The regional Space Coast Transportation Planning Organization established a complete streets funding assistance program in 2011 to promote the creation of complete streets throughout Brevard County. It analyzed eleven complete streets candidates through the county declaring six of them as strong candidates including a corridor

in the City of Titusville. The state Department of Transportation with support from the Space Coast Transportation Planning Organization and local cities, are developing bicycle paths that will connect cities across the state. Florida is a leader in providing greenways and trails and passed a Florida statute creating the Office of Greenways and Trails with the goal of establishing a “fully integrated and statewide trail network”<sup>7</sup>. Connecting bicycle trails on the Refuge with statewide trails is in their statewide 2013-2017 plan.

Merritt Island is viewed as a regional gem enhancing the attraction to the area and supporting the regional economy not only through the tourists it attracts but also the living of commercial fisherman and other professions it supports. By keeping up with regional trends and actively seeking connectivity, Merritt Island continues to play its supportive role for the region.

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<sup>7</sup> Florida's Greenways and Trails System Plan: 2013-2017. < <http://www.dep.state.fl.us/gwt/>>

## The Public Lands Transportation Landscape

Public lands present a transportation planning landscape with unique objectives and constraints. These can range from planning for facilities that do not degrade the habitat or managing public demand so it minimally affects wildlife while ensuring visitors have a positive visitor experience. Transportation planning at Merritt Island National Wildlife Refuge not only has to balance the protection of the habitat with providing mobility for the visitors, but balances the needs of its federal agency neighbors. These are variables the scholar had to learn and work with during their fellowship.

### *Merritt Island is 'for the birds'*

As the name implies, a national wildlife refuge is a refuge, a place of protection for wildlife and *where wildlife comes first*. The objective of transportation planning, in the traditional sense, is to achieve efficiency and safety for the movement of vehicles and people. However, the purpose of refuge management is to conserve habitat for the protection wildlife, and if appropriate, refuges provide amenities and interpretation for the public to experience such wonderful lands.

When planning for transportation in wildlife refuges, it is essential to remember that the mobility of peoples is second to the protection of wildlife. Part of the mission of wildlife refuges is to balance the conservation and protection of wildlife and their habitats while providing for public access and continual benefit of the American people. Several scientific studies reveal a correlation between human activity and its negative effect on wildlife. Human activity near wildlife can cause them to expel precious energy that is needed for survival actions such as feeding or reproducing.

One report<sup>8</sup> published in 2005 conducted field studies at a coastal refuge that uses an impoundment system to manipulate water levels to provide a feeding habitat for migratory overwintering birds, a habitat management method also practiced at Merritt Island. It concluded that human activity negatively affects wildlife but, more pertinently, it emphasized management implications such as “the needs for continual season closure of the impoundment systems in order to protect overwintering dabbling ducks from disturbance.” It also noted that “it is important that human disturbance levels on the dike roads do not limit the use of the impoundment system *by the birds* for which it was created.” The impoundments are first for the birds, and the transportation access impoundments provide for the public to experience the birds is second. Realizing and understanding the management practices and behaviors of the wildlife at the Federal land unit is an important part of the transportation planning process, especially at wildlife refuges, as it can play a significant role in controlling public access, either spatially or seasonally.

To comprehend the needs of the wildlife at refuges, it would be valuable to shadow biologists stationed at the refuge. Participating in their field studies and daily duties to manage the habitat not only presents rare experiences for personal enjoyment, but provides a direct, hands-on learning experience to gain an understanding of the unique needs of wildlife and their habitat.

Remember, wildlife refuges are for the wildlife, and at Merritt Island, it is for the birds (literally).

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<sup>8</sup> Effect of Human Disturbance on the Behavior of Winter Ducks published in 2005

## *A Balancing Act*

The region around Merritt Island National Wildlife Refuge is home to three separate Federal agencies that all work cooperatively to manage the land: the U.S. Fish and Wildlife Service, the National Park Service, and the National Aeronautics and Space Administration (NASA). In 1963, the Refuge was established as an overlay of NASA's John F. Kennedy Space Center. A cooperative agreement, signed between the U.S. Department of the Interior and NASA, provided for NASA to retain land ownership while establishing a buffer for space-related activities as a wildlife refuge managed by U.S. Fish and Wildlife Service. Today, the Refuge is responsible for managing 140,000 acres of Kennedy Space Center's non-operational lands including secure and non-secure (public) areas. The Refuge also works closely with National Park Service's Canaveral National Seashore, which is located along Merritt Island's eastern oceanic coastline. Approximately 34,000 acres of land is co-managed by Canaveral National Seashore and the Refuge. In this shared area, the Refuge manages habitat and wildlife and Canaveral National Seashore preserves cultural resources.

Generally, this cooperation has proven to be a positive relationship. Kennedy Space Center, as the larger organization, provides many services for the Refuge while the Refuge maintains the habitat and wildlife of the Center's non-operational lands and additionally provides wildlife call services retrieving wildlife that have found their way inside buildings<sup>9</sup>. While Kennedy Space Center is supportive of the Refuge full-filling its mission and managing the land as needed, the Refuge has needed to alter their operations subject to the needs of the Space Center. The Space Center will close public roads on the Refuge if needed for launches and/or tests for either select times during the day or an entire day, as was the case during the age of the shuttle space program. Prescribed burns are one of the many habitat management methods the Refuge employs but each scheduled burn is subject to Kennedy Space Center approval. Accounting for these special considerations makes transportation planning at this public land unique.

While the U.S. Fish and Wildlife Service and the National Park Service are housed under the same Department, they have different missions: the Fish and Wildlife Service "work with others to conserve, protect, and enhance fish, wildlife, plants and their habitat for the continuing benefit of the American people" and the National Park Service "preserves unimpaired, the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations". It is a unique opportunity for the entities to collaborate on visitor services but the differing mission creates a few challenges when planning. The Refuge and Canaveral National Seashore provide support for each other in a regional context as federal regulations can differ from state or local regulations. They have also established a shared fee system making passes and fees more streamlined for the public. The expansion of transit service and the development of bicycle facilities further fosters this relationship and provides more opportunities for programs and experiences for the public that other public lands may not have available. Proposed bicycle facilities are planned to provide a bicycle connection between the Refuge and Canaveral National Seashore establishing non-motorized connection between both Federal lands and proposed alternatives under the transit study call for providing shared interpretative tours on each federal facility. One alternative calls for using the interpretative resources at Canaveral National Seashore in conjunction with the established tour system and vehicle at the Refuge. The relationship between the Refuge and Canaveral National Seashore has strengthened and provided unique opportunities for transit expansion.

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<sup>9</sup> Examples of wildlife calls: retrieval of birds inside the Vehicle Assembly Building and alligators that have meander inside office buildings. <<http://modernfarmer.com/2013/09/gators-rattlers-bobcats-boars-life-nasa-campus/>>

## Case Study for Future Public Lands Transportation Scholars

I view the public lands transportation scholar fellowship as a sink or swim opportunity. While a master's degree with a focus in transportation engineering and a variety of internships in public and private transportation fields provided an adept skill set, the fellowship was an initial professional position where I was responsible for the project's productive and effective outcome. I was excited by the challenge ahead of me to see how far and well I could swim but also cognizant of my minimal experience acting as dead weight. Similar to almost anything in life, there were high's and low's, impediments and successful breakthroughs, and kind people offering to provide any assistance.

I was fortunately assigned to a public land with such as welcoming, dedicated, and helpful staff. The Refuge manager has an open door policy making it easy to approach and discuss ideas or issues associated with the projects. Her vision for Merritt Island and the future of its visitor services program helped to initiate and guide the transit study. The support and input from the entire staff was an invaluable contribution to the projects as each staff member has their own unique experience with the Refuge and its visitors. I enjoyed my conversations with the staff as all brought something different to the table contributing valuable inputs and ideas.

I believe what helped to gain support from the staff and established an open, continuous conversation about the projects was my extra effort to be involved and apart of the Refuge's inner community. It was a rewarding coincidence to be at the Refuge while it was celebrating its 50<sup>th</sup> anniversary and as such, the Refuge was holding a festival in celebration. I volunteered to be part of the planning and through my involvement I was able to work with members I might not had otherwise. It was a great start to my tenure at Merritt Island.

A second valuable experience I would recommend to future scholars is to spend a day with at least one staff member from each department. Merritt Island is divided into management, fire, visitor services, biology, and maintenance departments. During my time there, I experienced the Refuge's wildlife management methods of sea turtles and Scrub Jays and I spent many Saturdays at the Visitor Information Center to understand the visitor and how public programs are run. This not only presents you with unique experiences and great stories, but it provides you with a deeper understand of your unit, its mission and purpose, and the daily tasks required to run the unit.

For areas beyond a scholar's knowledge, the fellowship program provides numerous resources. My project had the unique circumstance of working on a transit planning grant from the U.S. Department of Transportation Volpe Center. I worked closely with two community planners from the Volpe Center on the transit planning study through weekly phone meetings and site visits by the Volpe team to the Refuge. We cooperatively drafted the transit planning report including the existing conditions section and the short-term and long-term alternatives plans.

The combination of a public lands transportation scholar position working with an experienced Volpe team is quite valuable for all parties involved and I would recommend it as a scenario for future scholar assignments. Working with Volpe blended a productive set of skills as the Volpe team brought experience and resources to the study and as the on-site liaison, I brought 'boots on the ground' knowledge and direct communication with Refuge staff. I was a great resource for the Volpe team gathering information, providing input backed by on-site experiences, and creating an open dialogue with the Refuge staff without draining Refuge personnel resources. Working with the Volpe Center was an exceptional apprenticeship experience gaining oral and written communication skills and management skills of a study of this magnitude.

## Professional Development

The public lands transportation scholar fellowship experience is a beneficial professional development program for young engineers and planners. Many assignments provided much opportunity for improving communication skills. Communicating with stakeholders is a key part to transportation planning in Federal lands and scholars gain much experience in reaching out to stakeholders, holding meetings and discussions to explain a project to gain support. The scholars must utilize the stakeholders' feedback in order to incorporate constraints or desires to build support.

As part of the program the scholar had the opportunity to present in a poster session about the research at the Refuge. This opportunity for a young professional to present at the Transportation Research Board national conference is a professionally gratifying benefit of the fellowship program. (See Appendix B for a copy of the scholar's poster presented at the conference.)

The unique challenges that public lands provide for transportation planning broaden the knowledge of each transportation scholar. While education focuses on the fundamentals and class projects are traditionally centered on municipal and general public projects, the fellowship allows the scholars to build upon their foundation applying the practice to unique public lands. This experience diversifies a scholar's background and will bring something distinctive to any position they may have in the future, whether they remain in the public lands or other aspects of transportation planning.

## Resources

Pease, Melissa L., Robert K. Rose, and Mark J. Butler. *Effects of Human Disturbances on the Behavior of Wintering Ducks*. Wildlife Society Bulletin, Vol. 33. No. 1, Spring 2005: pp. 103-112.

United States Fish and Wildlife Service, Division of Economics. *Banking on Nature 2011: The Economic Benefits of National Wildlife Refuge Visitation to Local Communities*. Washington, D.C., Oct. 2013.

United States Fish and Wildlife Service. *Conserving the Future Wildlife Refuges and the Next Generation*, Oct. 2011.

United States Fish and Wildlife Service. *Merritt Island National Wildlife Refuge Comprehensive Conservation Plan*, 2008.

United States Geological Survey. *National Wildlife Refuge Visitor Survey 2010/2011: Individual Refuge Results for Merritt Island National Wildlife Refuge*. 2011.



## Appendix

The appendix includes reports and other documents produced by the scholar during their fellowship.

- A. Merritt Island National Wildlife Refuge Scholar Statement of Work
- B. Scholar's poster presented at the Transportation Research Board national conference – January 2014 in Washington, D.C.
- C. Scholar's power point presentation given during the fellowship training – June 2013 in Denver, CO
- D. Scholar's power point presentation given at a board meeting of the Merritt Island Wildlife Association, the Refuge's friends group – December 2013 in Titusville, Florida
- E. Scholar's article submitted to *Habitchat*, the Refuge's friends group quarterly newsletter
- F. Merritt Island National Wildlife Refuge Bus Policy Training Booklet
- G. Merritt Island National Wildlife Refuge Road Safety Audit – Final Report  
*To be appended after completion*
- H. Merritt Island National Wildlife Refuge Transit Planning Study – Final Report  
*To be appended after completion*

# **Appendix**

to

*Diversifying Access to Urban refuges through Alternative Transportation*

2013 Public Lands Transportation Scholar Report

# **Statement of Work for Alternative Transportation Planning for Merritt Island National Wildlife Refuge**

by

Paul S. Sarbanes Transit in Parks Technical Assistance Center in Cooperation with  
FWS and FHWA Federal Lands

for the

2013 -14 Merritt Island National Wildlife Refuge

May 2, 2013

## **PROBLEM STATEMENT AND BACKGROUND SUMMARY**

Merritt Island National Wildlife Refuge (MINWR or Refuge) covers 140,000 acres and is located along Florida's east central coast about 60 miles east of the city of Orlando, Florida. The refuge was established in 1963 as an overlay of the National Aeronautics and Space Administration's (NASA) John F. Kennedy Space Center (KSC). MINWR includes 34,345 acres of land and water shared with The National Park Service Canaveral National Seashore (CNS). The City of Titusville, located just 3 miles west, includes a pedestrian oriented downtown and serves as the gateway community for the Refuge, KSC and CNS (Figures 1 and 2).

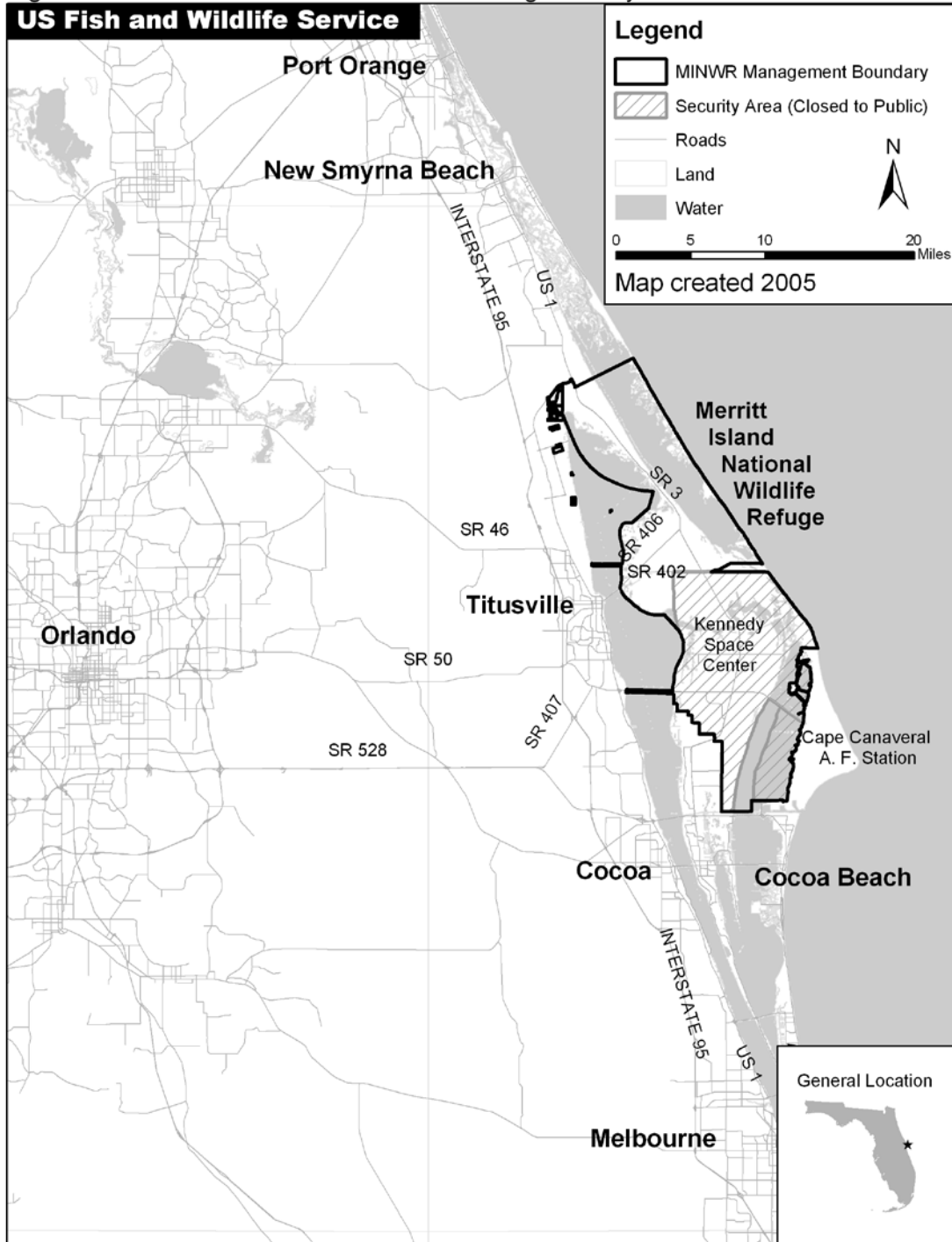
The Refuge receives over 1 million visitors each year. The 2010-2011 USGS Refuge Visitor Survey conducted at MINWR found 94% of visitors use private vehicles to access Refuge facilities. The same survey found 63% of visitors were coming to the Refuge from greater than 50-miles away. The MINWR Comprehensive Conservation Plan (CCP), completed in 2008, identified development of transit or tram service and bicycle paths as options that could help reduce congestion and private vehicle use within the Refuge. Through the work of the Transportation Scholar (scholar), the Refuge hopes to 1) evaluate alternative transportation options, and 2) identify the most cost-effective ways to manage over 30 miles of roads for public use.

In 2011 the Refuge's friends group the Merritt Island Wildlife Association (MIWA), and the Refuge cost-shared the purchase of a 14-passenger bus. Currently the bus is used 2-3 times a week from November-April to pick up visitors at the Visitor Center and provide guided interpretive tours of Black Point Wildlife Drive. The Refuge recognizes the potential to use the bus to improve connectivity and access between the City of Titusville and MINWR. The scholar's primary task will be to explore transit expansion options, including: increased access opportunities, potential markets to serve, service parameters, and partnerships with established mass transit programs or other agencies with defined transit needs.

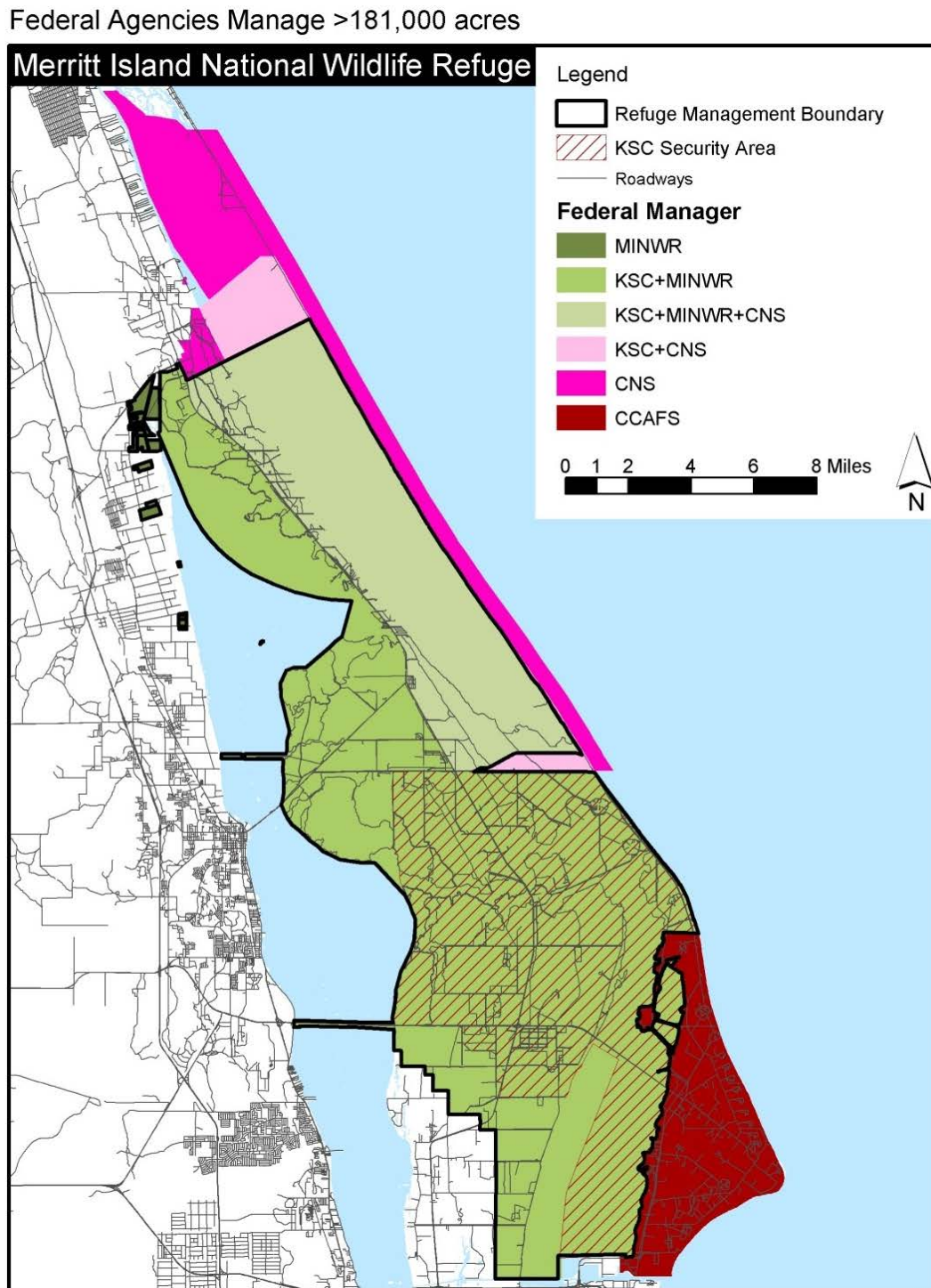
Additionally, the scholar will work with local and state agencies to increase safe bicycle access to the Refuge. The scholar will assist with planning efforts to connect the Refuge to regional bike paths as well as develop print, broadcast, and digital materials promoting Refuge access by transit and bicycle. Regional planning efforts are currently developing and/or building parts of a 200-mile loop trail and the Florida East Central Coast Rail Trail. The Refuge CCP also identified bicycle trails or paths to be developed within the Refuge. The scholar will assist in furthering all of these efforts.

**NOTE:** It is anticipated the U.S. DOT John A. Volpe National Transportation Systems Center (Volpe) will also be assisting MINWR with some transportation planning tasks in FY13 and beyond. As their role is further established and/or secured, the scholar may work in coordination with them to complete some tasks in this Statement of Work.

Figure 1.1. Merritt Island National Wildlife Refuge Vicinity



**Figure 1** – Merritt Island NWR location on Florida’s east central coast; in proximity to Orlando, Titusville and several other public lands.



**Figure 2** – Closer view of Merritt Island NWR and adjacent entity boundaries. Transportation facilities include 10 miles of foot trails, a 7-mile Wildlife Drive, over 30 miles of secondary public roads and 4 boat ramps.

## **WORK PLAN**

This project consists of 5 tasks which are described below.

### **Task 1 – Identify expanded transit service options between the City of Titusville, the Refuge Visitor Center and Black Point Wildlife Drive**

#### **Subtask 1.1 – Define potential transit markets and conceptual service scenarios for those markets.**

The scholar shall work with MINWR staff to identify potential groups transit service could target to serve. The scholar will first focus on understanding the types of visitors and uses at the Refuge now. They will do this through review of previous studies, looking at existing traffic data, gathering additional data if necessary, conducting field observations of visitor use and movement, and informal visitor surveying.

Additionally, the scholar will be asked to specifically consider transit service that would target (but not limited to): lower income, mobility limited, elderly populations in the area, school, and camp groups. The scholar will conduct analysis and work with stakeholders in these groups to define what transit need to the Refuge may exist and what successful service would need to include, such as addition of Refuge interpretive features and mobility enhancements.

#### **Subtask 1.2 – Develop goals and objectives for short-term and long-term transit service to and within MINWR.**

The scholar will work with MINWR staff to identify what short-term and long-term measurable goals and objectives the Refuge wants to focus on for transit service. The scholar will most likely coordinate with Volpe to lead the Refuge through this exercise.

Development of the goals and objectives should serve to assist the scholar in identifying opportunities and constraints to expansion of service, in coordination with work in the other subtasks.

#### **Subtask 1.3 – Develop and evaluate routing and service concepts for long-term operations**

The scholar will coordinate with Volpe and MINWR to develop short-term and long-term transit service concepts.

These concepts will consider:

- 1) Route and schedule planning for the existing 14-passenger bus to determine bus stops, frequencies, and headways. These should be based on local conditions, anticipated demand, and Refuge capacity and goals.



- 2) Additional transit options for long-term use of the existing bus and potential expansion of service with additional vehicles. For expansion of service scenarios, the scholar will need evaluate capital and operational options, including research on vehicle types and leasing versus purchasing options.

For both 1 and 2 above the scholar will need to include what markets the transit would serve, and analysis of the cost, funding, and partnering opportunities.

Partners throughout the area may have need and resources to tie into a Refuge system that would result in better regional transit service for residents and visitors in the area. For example NPS CNS through previous work has identified need for periodic shuttle service. There may be opportunity to cost-share an expanded transit system that serves both NPS and Refuge visitors.

Other partnerships to consider include:

- Space Coast Area Transit (SCAT) existing buses/trolley system
- City of Titusville,
- National Park Service,
- NASA,
- Florida Department of Transportation,
- Space Coast Transportation Planning Organization,
- Volusia County
- Brevard County
- Space Coast Transit Authority, Titusville Area Chamber of Commerce.

***Products –***

- *A technical memorandum summarizing findings of transit markets in the area*
- *A technical memorandum documenting agreed upon goals and objectives for short-term and long-term transit service*
- *Report of conceptual transit scenarios including: description of all scenarios, evaluation of pros and cons, and recommendation on scenarios to further for compliance and implementation*

***Schedule – Complete by April 30, 2014***

**Task 2 – Assist with efforts to increase safe bicycle access to the Refuge via connection to regional bicycle trail**

The scholar will coordinate with local transportation planning organization (TPO) and State DOT to conduct a Planning Design and Engineering study for a 15-mile bike path through the Refuge and connecting to the cities of Titusville and Edgewater. This study will be led by the TPO and State DOT. The scholar will serve as the Refuge liaison,

participating in coordination meetings, evaluating options/deliverables, providing Refuge information as needed.

***Product*** – A technical memorandum summarizing efforts and progress

***Schedule*** – February 28, 2014

### **Task 3 – Evaluate Refuge roads and develop long-term concepts for providing safe bicycle access through the Refuge**

The scholar will look at road and trail access through the Refuge holistically and evaluate options for providing short-term and long-term bicycle access. The scholar will work with MINWR staff to identify the criteria for appropriate areas for bicycling as directed in the 2008 CCP.

The scholar will facilitate/conduct a technical safety assessment or road safety audit focused on bicycle access within the Refuge. Through this process the scholar will identify both operational and infrastructure improvements the Refuge should consider to facilitate long-term bicycle access. They will present and evaluate these options with the Refuge to identify the most feasible options to move forward. The scholar will also develop an action plan the Refuge can utilize to move the most feasible solutions forward.

The scholar will also assist the Refuge in developing policy and educational materials necessary to communicate to visitors where they can bicycle.

***Products*** –

- Road Technical Safety Report/Memorandum
- Technical Memorandum summarizing short and long term bicycle access concepts and associated operational and infrastructure improvements needed to implement
- Sample materials for educational distribution

***Schedule*** – Complete April 30, 2014

### **Task 4 – Prepare TRB Poster and Attend TRB**

The scholar will prepare a poster for the 2014 Transportation Research Board (TRB) detailing their project and will present it at the 93<sup>rd</sup> annual TRB Annual Meeting.

***Product*** – Poster

***Schedule*** – Start November 18, 2013 - Complete January 17, 2014

**Task 5 – Prepare Final Report**

The scholar will prepare a final report based on the template provided by Public Lands Transportation Scholar Program. This report will summarize the work performed during the scholar's assignment, products produced and lessons learned that may be of value to future scholars.

***Product** – Final Report*

***Schedule** - Complete April 30, 2014*

**DELIVERABLES**

- Task 1 – Technical Memoranda
- Task 2 – Technical Memoranda
- Task 3 – Technical Memoranda, Sample Educational Materials
- Task 4 – Poster for 2014 TRB Annual Meeting
- Task 5 – Final Report



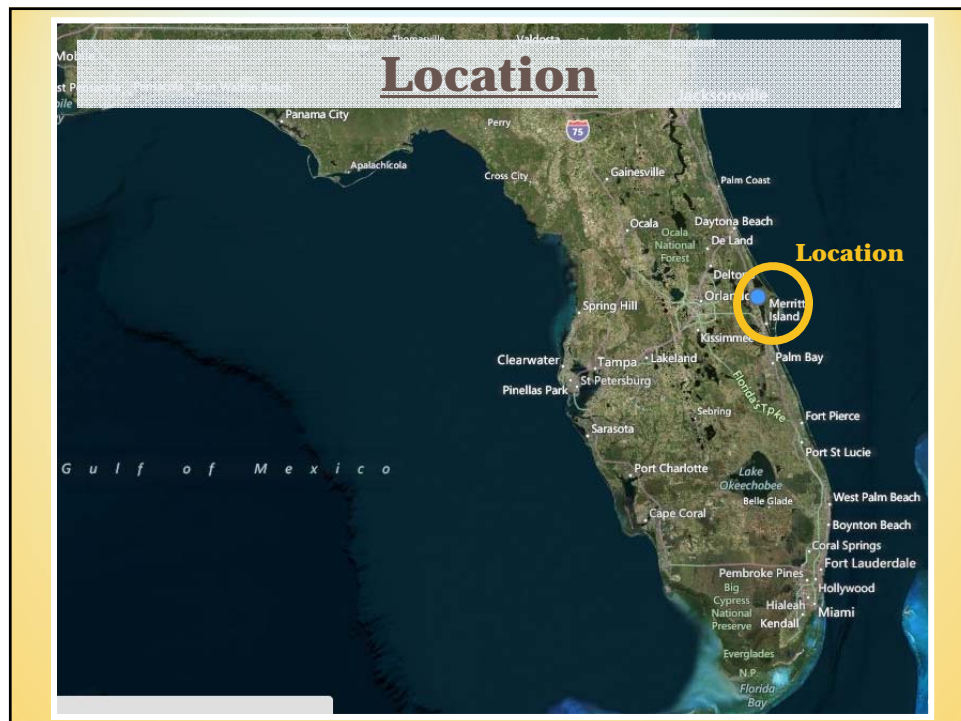


# Elisa Kropat

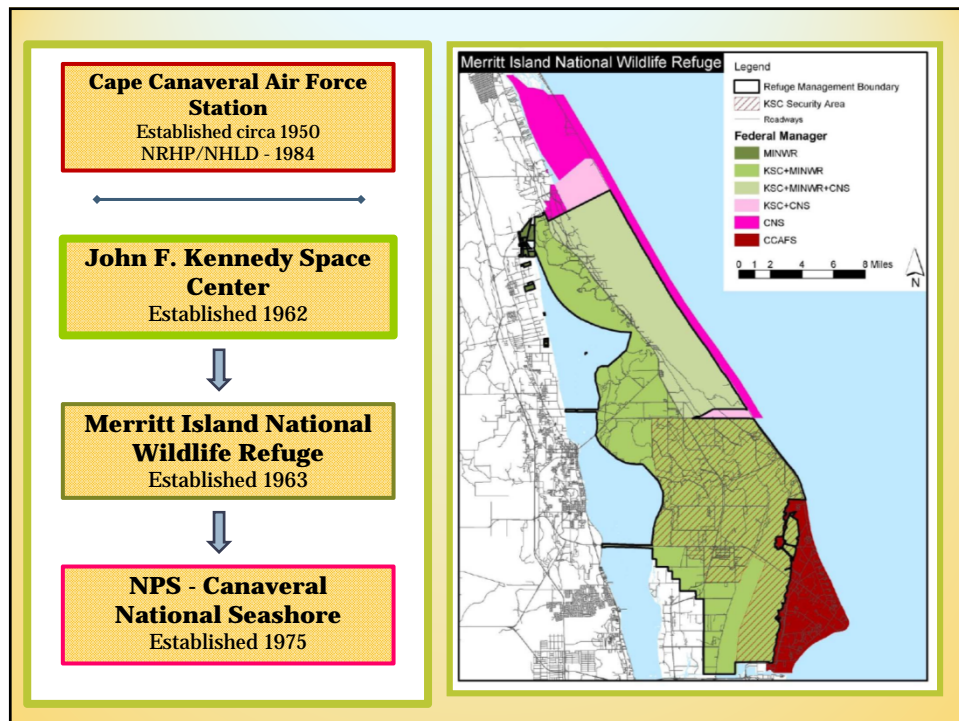
E.I.T.  
*Public Lands Scholar*

Merritt Island National Wildlife Refuge  
*Titusville, Florida*

B.C.E, 2011      UNIVERSITY OF DELAWARE      M.C.E, 2013









### Background




#### Wildlife Statistics


*>500 species of wildlife*



*>1,000 species of plants*

*Seven distinct types of habitats*

*15 species listed as threaten or endangered*

### Background



#### Transportation Facilities

*A seven mile wildlife drive*

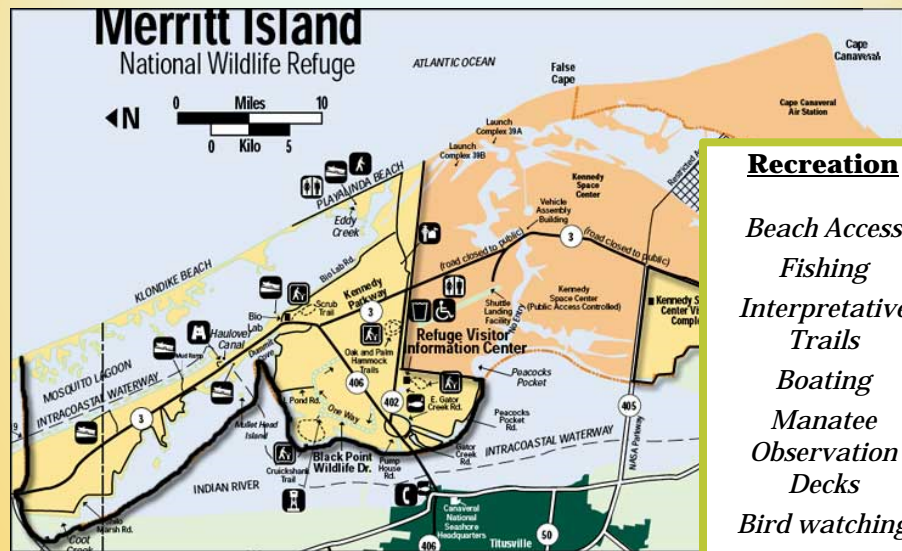
*10 miles of foot trails*

*> 30 miles of secondary public roads*

*Four boat ramps*



## Background



## Recreation

*Beach Access*  
*Fishing*  
*Interpretative*  
*Trails*  
*Boating*  
*Manatee*  
*Observation*  
*Decks*  
*Bird watching*  
*Observation*  
*Tower*

## Transportation Issues

The Refuge receives over **1 million visitors each year**

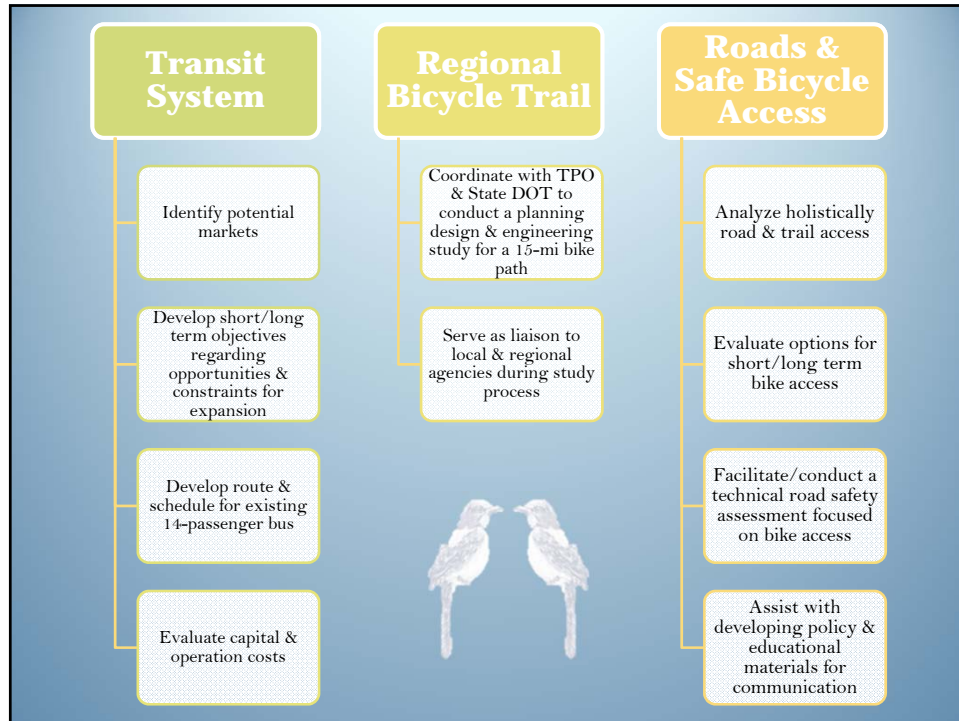
2010-2011 Visitor Survey found that **94% of visitors use private vehicles to access the Refuge**

### Task

Explore and  
identify **transit  
service options**  
connecting the  
City of Titusville  
with the Refuge

## Task

Assist with efforts  
to **increase safe  
bicycle access**  
to the Refuge



## Concerns

❖ Lack of bicycle planning experience



# Thank You

Merritt Island National Wildlife Refuge  
*Titusville, Florida*





# **Elisa Kropat**

**E.I.T.**  
*Public Lands Transportation Scholar*

**Merritt Island National Wildlife Refuge**  
*Titusville, Florida*

B.C.E, 2011            M.C.E, 2013

## *What is a transportation program & scholar?*



- ◀ Individuals with substantial knowledge and expertise in transportation planning
- ◀ Assist public lands in transportation planning and implementation
- ◀ Help parks and public lands reduce traffic, congestion and pollution while improving visitor experiences



*Paul S. Sarbanes Transit In Parks*

**Technical Assistance Center**

**UNDERSTANDING**

**RESOURCES**

**SOLUTIONS**



**MONTANA**  
STATE UNIVERSITY

Western  
Transportation  
Institute

## *Why apply for transportation scholar?*

- ◀ To promote transit and non-motorized transportation access opportunities
- ◀ Enhance visitor experience while reducing congestion
- ◀ Reach a new visitor base group and provide more equitable access

*My Projects*

**1) Transit Planning Study**

**1) Bicycle & Pedestrian Road Safety Audit**

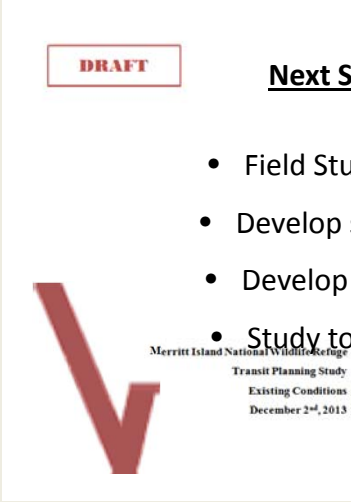
*My Projects*  
Transit Planning Study

<div style="border: 1px solid brown; background-color: #fff9c4; padding: 2px; text-align: center; margin-bottom: 5px;"><b>GOAL</b></div> <p style="color: brown;">Develop a transportation system that supports Refuge's sustainable management practices, including reducing congestion to uphold the Refuge's resource conservation purpose.</p>	<div style="border: 1px solid green; background-color: #c8e6c9; padding: 2px; text-align: center; margin-bottom: 5px;"><b>GOAL</b></div> <p style="color: green;">Expand access opportunities to the Refuge through multimodal transportation options for a diverse group of current and potential visitors.</p>	<div style="border: 1px solid blue; background-color: #bbdefb; padding: 2px; text-align: center; margin-bottom: 5px;"><b>GOAL</b></div> <p style="color: blue;">Improve connectivity between the Refuge &amp; the surrounding region.</p>
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## My Projects

### Transit Planning Study

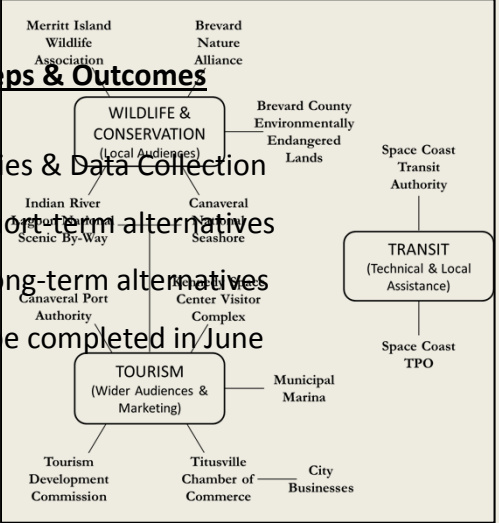
DRAFT



Merritt Island National Wildlife Refuge  
Transit Planning Study  
Existing Conditions  
December 2<sup>nd</sup>, 2013

### Next Steps & Outcomes

- Field Studies & Data Collection
- Develop short-term alternatives
- Develop long-term alternatives
- Study to be completed in June



## My Projects

### Road Safety Audit

- Qualitatively estimates and reports on potential road safety issues
- Identifies opportunities for improvements in safety for all road users




BEFORE

AFTER



*My Projects*  
Road Safety Audit

- ✓ **Black Point Wildlife Drive**      Vehicle-Bicycle Conflicts
- ✓ **Visitor Information Center**      Lack of Infrastructure  
    **Complex**
- ✓ **Primary Public Use Zone**      To Develop Paths & Connections  
    **-Triangle Area**
- ✓ **Proposed Alignment for the**      How plays a role in future  
    **Titusville to Edgewater Trail**      bike planning



**Thank You**

## Habi-Chat Article

**Title: Looking Forward - Changing Up Visitor Access**

**Date: December 12, 2013**

**Written By: Elisa Kropat, MINWR's Public Lands Transportation Scholar**

It is absolutely evident that this refuge is a gem. To have a refuge with such amazing wildlife experiences and recreational opportunities in a convenient proximity to other tourist destinations has led to the over one million annual visitors. However, the expansive refuge and the infrastructure not designed for high vehicle use has become incompatible with the high frequency of visitors. To help the Refuge plan for a new vision for visitation, Refuge Project Leader, Layne Hamilton, applied to the *Public Lands Transportation Scholars Program* to receive an individual with substantial knowledge in the transportation field which brought me here in June to help remedy this growing problem.

When I arrived to land of pesky mosquitos but beautiful Scrub Jays, I immediately began working on a *transit planning study*. The USGS *Visitor Use Survey* conducted in 2010 revealed that 94% of visitors accessed the Refuge using a private vehicle. Between our car-dependent society and the types of visitor uses found at the Refuge, this figure is not surprising. While I have not yet experience it myself yet, I am told that parts of the Refuge can become quite congested during the peak birding season. From conversations with Refuge management, I have discovered that between budget constraints and the shrinking size of the staff, it is a challenge to maintain the current infrastructure and manage existing visitor use conflicts. The transit planning study is designed to address these problems.

With three established goals, the study will outline a transportation system that supports sustainable management at the Refuge including reducing congestion, utilize modes alternative to private vehicles to expand access opportunities bringing in a more diverse group of visitors, and improve the connectivity between the Refuge and the surrounding region. Short term outcomes of the study may include developing ways to broaden the use of the existing 14 passenger bus such as using it to expand educational opportunities, attract underserved populations or more local residents, and disperse visitation around the Refuge. The study will also explore long term alternatives that will meet the needs of the Refuge and their community partners over a 5 to 20 year horizon. Alternatives may include planning for concession based visitor programs which would allow an organized opportunity for the Refuge to share its mission while providing for an enjoyable visitor experience that will reduce degradation to the Refuge's infrastructure or resources. The study is scheduled to be completed in June of 2014.

Just in my few short months, my knowledge of the wildlife refuge system has expanded immensely. I understand the value of having visitor services programs to not only educate society on the importance of providing *space for wildlife* but to also grant society the fortune of seeing wildlife in their natural habitat. This study will not detract from those essential purposes but instead, build upon the existing visitation and plan for effective management for the growing gravitation to the Refuge and the region.



# 14P Bus Operator Training Booklet

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*Merritt Island  
National Wildlife Refuge*

This booklet is used for training operators of the Ford 350 E, 14 passenger bus owned by MINWR.

December 2013



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## Loose Forms

- 1. MINWR Vehicle Use Agreement**
- 2. Authorization for Operation of Motor Vehicles and/or Equipment**
- 3. FL DMV mail-in driving record request form**

## A. Bus Operator Position Description

<b>Organization</b>	<b>Merritt Island National Wildlife Refuge U.S. Fish and Wildlife Service</b>
<b>Position Title</b>	<b>Bus operator and tour guide MINWR's Ford 350 E, 14 - passenger bus</b>
<b>Duties and Responsibilities</b>	<ul style="list-style-type: none"> <li>• Conduct interpretative tours while operating bus</li> <li>• Establish tour programs; write an interpretive outline and present an enjoyable and educational tour that connects to the mission of the USFWS and objectives of MINWR.</li> <li>• Properly care for, maintain, and return Refuge property.</li> <li>• Ensure shuttle bus is in safe working condition before and after tour; must immediately notify refuge staff of any problems or dysfunctions.</li> <li>• Ensure that designated MINWR phone and personal cell phone are charged, ready for use, and taken with you during bus tour.</li> <li>• Review safety procedures and guidelines outlined in the MINWR bus operator training booklet with passengers prior to departing.</li> <li>• Review and comply with driver's safety check list located on the bus before operating bus.</li> <li>• Follow state of Florida driving regulations while operator bus.</li> <li>• Follow regulations and guidelines stated in MINWR bus operator training booklet while operating bus.</li> </ul>
<b>Qualifications and Requirements</b>	<ul style="list-style-type: none"> <li>• Possess a valid U.S. driver's license.</li> <li>• Have an acceptable 3 year driving record; review by USFWS federal law enforcement officers and MINWR management.</li> <li>• Attend and pass MINWR bus operator training course annually.</li> <li>• Ability to work independently with minimal supervision.</li> <li>• Interest in learning about Refuge resources and management practices.</li> <li>• Be able to interact patiently and tactfully with visitors and answer a variety of questions.</li> <li>• Ability to endure exposure to the elements for long periods of time; sun, wind, rain, biting insects and standing.</li> <li>• Ability to walk and stand for extended periods of time on uneven terrain.</li> </ul>
<b>Lines of Communication</b>	<ul style="list-style-type: none"> <li>• MINWR Volunteer Coordinator</li> <li>• MINWR Public Use Supervisory Ranger</li> </ul>
<b>Orientation and Training</b>	<ul style="list-style-type: none"> <li>• MINWR bus operator training; annual.</li> <li>• First Aid, CPR, and AED certification; provided by Refuge.</li> <li>• USFWS background investigation (DOI Access Badge level: NACI).</li> <li>• NSC Defensive Driving Training course; online.</li> </ul>
<b>Work Schedule</b>	<b>Flexible, unless work is part of a scheduled project.</b>
<b>Place of Work</b>	<b>Driving bus on MINWR property and permissible off-site locations stated in bus operator training booklet.</b>
<b>Benefits</b>	<b>Volunteer will learn about the Refuge resources and have the opportunity to interact and educate visitors about them.</b>
<b>Contact</b>	<b>Nancy Corona; office: (321) 861-0668; e-mail: <a href="mailto:Nancy_Corona@fws.gov">Nancy_Corona@fws.gov</a></b>

## B. MINWR 14-Passenger Bus Policy

### Merritt Island National Wildlife Refuge is to:

- a. Design and provide annual training refresher before the start of the peak season for all new operators as well as current operators
- b. Provide first aid, CPR, and AED certification for operators
- c. Maintain a list of approved operators including their
  - i. Attendance of annual refreshers
  - ii. Up to-date certifications of first aid, CPR, and AED
  - iii. Copies of signed agreements for each operator including
    1. MINWR's *Vehicle Use Agreement*
    2. Volunteer Services Agreement for Natural Resources Agencies (SF-301A)
    3. Authorization for Operation of Motor Vehicle and/or Equipment (SR 3-2267)
- d. Ensure a refuge staff member reviews operator's driving record history annually to confirm by signing and dating the operator's *Vehicle Use Agreement* it meets refuge standards but not keep a copy of the record
- e. Ensure that there are no more than ten approved operators at a single time
- f. Provide updated emergency contact list that is to be kept inside the vehicle
- g. Provide communication device (cell phone) for emergency or incident purposes to be taken on tours
- h. Provide DI-135 "What Every Driver Should Do In Case of an Accident" packet to be kept inside the vehicle
- i. Be responsible for general vehicle maintenance
- j. Support the use and operation of the vehicle, its operators, and interpretative tours with a specific and primary focus on operations and tours that support educational opportunities regarding:
  1. Scrub Jays and their habitat
  2. Waterfowl and wetlands
  3. Endangered species



## C. MINWR 14-Passenger Bus Operator Agreement

### MINWR 14 PASSENGER BUS OPERATOR AGREEMENT

**Purpose:** The vehicle use agreement is intended to reduce the risk of accident and promote safety for the driver as well as the passengers associated with the operation of the vehicle. The term 'vehicle' in this agreement hereafter refers to the 14 passenger bus owned and operated by the Merritt Island National Wildlife Refuge (MINWR).

#### 1. Operator Qualifications

**An operator of the vehicle must**

- a) Be a U.S. Citizen and possess a valid U.S. driver's license
- b) Be of age 21 years or older
- c) Have a minimum of three years driving experience
- d) Obtain a 3-year driving record from the Florida Department of Motor Vehicles, at a cost of \$8 to the operator, which must meet the MINWR defined acceptable driving record standards
- e) Attend the new driver vehicle training and annual refresher provided by MINWR
- f) Be first aid, CPR, and AED certified; certification is provided by MINWR
- g) Sign the *Volunteer Services Agreement for Natural Resources Agencies* (SF-301a)
- h) Sign the *Authorization of Operation of Motor Vehicles and/or Equipment* (SF 3-2267)
- i) Take the *National Safety Council's Defensive Driving Training Course* ; provided online by USFWS at no cost to applicant

#### 2. Operator Responsibilities and Operating Policies

**To maintain status as an approved operator, the operator must**

- a) Operate vehicle in accordance with all traffic laws, ordinances, and regulations and may not operate the vehicle while drowsy or under the influence of alcohol or drugs
- b) Report the onset of physical or mental conditions that inhibit ability to safely operate the vehicle to Refuge management; Refuge management will assess situation
- c) Report traffic violations and accidents that occurred while operating the vehicle regardless of damage
- d) Maintain the driving record standards and report suspensions and restrictions affecting their state operator's license
- e) Carry no more than 14 passengers
- f) Ensure a government issued cellphone and charger is onboard the vehicle in a known location
- g) Abide by policies set forth during the MINWR bus operator training, specifically driving only on approved roads

**Acknowledgement:** Violation of vehicle use agreement or a demonstrated careless disregard in operating the vehicle may result in the suspension or revocation of the privilege of operating the vehicle. **I hereby acknowledge the policies stated above and agree to abide by them.**

\_\_\_\_\_  
(Signature of Operator)

\_\_\_\_\_  
(Date)

☐ Operator has valid US  
driver license

\_\_\_\_\_  
(Staff Signature)

\_\_\_\_\_  
(Date)

☐ Operator is CPR certified

\_\_\_\_\_  
(Staff Signature)

\_\_\_\_\_  
(Date)

☐ Operator is first aid certified

\_\_\_\_\_  
(Staff Signature)

\_\_\_\_\_  
(Date)

☐ Operator's driving record  
meets standards

\_\_\_\_\_  
(Staff Signature)

\_\_\_\_\_  
(Date)



## D. Acceptable Driving Record Standards

Each applicant for the bus operator volunteer position is required to obtain a three-year driving history record from their state of residency. Applicants will be reimbursed for the cost.

Each applicant's driving record will be reviewed on an individual basis annually. Unacceptable driving infractions will include the following but are not limited to:

- Driving under the influence
- Careless driving infractions
- Excessive speeding infractions; greater than 20 mph

# GSA Sponsored – Defensive Driver Training

### Online Defensive Driving Course

National Safety Council's Online Defensive Driving Course is a four-hour course designed to provide convenient training on a personal computer. Using state-of-the-art animation and graphics, the online defensive driving course offers an engaging, interactive learning environment for Fleet customers to analyze real driving situations, spot driving hazards, and identify the correct defenses. GSA's Office of Motor Vehicle Management offers this training free of charge to GSA Fleet customers. Upon completion, students receive a Water Marked certificate from the National Safety Council that, in many states, may be used to lower automobile insurance rates. More than 65 million drivers have learned to protect themselves on the road by taking part in National Safety Council programs. Certification expires within three years, so those who took this course in 2008 will need to take it again to maintain certification.

### It's Fast, Easy, and Free!

1. Go to <http://drivethru.fas.gsa.gov/>
2. Click on the link for Defensive Driving Course located on the bottom left side of the screen
3. Enter FWS Customer number 01010014804G302 and (agency or private) e-mail address.
4. You will be presented with a registration page. (Ensure your pop-up blocker is disabled).

**New Student** - Fill in all your information, including a login ID and a password of your choice, then click on Submit. Enter Login ID and Password you just created. Note: A confirmation e-mail will be sent reminding you of the user name and password you created for access to the site at a later date. **See Example of requested information below.**

- 1) Click on Safety located on the My Place page.
- 2) Then on My Courses page, click on NSC Defensive Driving Course 9th Edition to begin the course.

**Returning Student** - click on this link [www.safetyserve.com/gsafleet](http://www.safetyserve.com/gsafleet) to log back in. Enter Login ID and Password

- 1) Click on Safety located on the My Place page.
- 2) Then on My Courses page, click on NSC Defensive Driving Course 9th Edition to begin the course.

NEW STUDENT –

*Please fill in all "Required Fields" ✓ and click the "Submit" button at the bottom of the screen.*

✓ Required Fields	
✓ Login ID:	<input type="text"/> <i>require more than 4 characters</i>
✓ Login Password:	<input type="password"/> <i>require more than 4 characters)</i>
✓ Re-enter Login Password:	<input type="password"/>
✓ First Name:	<input type="text"/>
✓ Last Name:	<input type="text"/>
✓ Agency Name:	<input type="text" value="USFWS"/>
✓ Bureau:	<input type="text" value="Department of the Interior"/> ▼
✓ Region:	<input type="text" value="03"/>
Unique Employee Identifier:	<input type="text"/>
✓ Work Phone:	<input type="text"/>
✓ Email:	<input type="text"/> Will automatically fill with E-mail provided.
✓ Address 1:	<input type="text"/>
Address 2:	<input type="text"/>
✓ City:	<input type="text"/>
✓ State:	<input type="text" value="None"/> ▼
✓ Zip-Postal Code:	<input type="text"/>
Country:	<input type="text"/>
Cert (office use only):	<input type="text"/>

Hit Submit

**New students** will see this when they hit submit at bottom on new employee page.

## Welcome to your Online Training Center

Please enter the following information to login.

Member Login	
Login ID:	<input type="text"/>
Password:	<input type="password"/>
Enter Password	
<b>LOG IN</b>	
Click on Log In	

**Access Help**  
[Frequently Asked Questions](#)  
[Forgot your ID or password?](#)

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**NEXT PAGE**

My Place	
<b>Categories:</b> <ul style="list-style-type: none"><li><a href="#">Safety</a></li></ul>	<b>Welcome to your online training:</b> <ul style="list-style-type: none"><li><b>To access a course, click on a category on the left.</b></li><li>If you have not started a course before, you may be asked to download a secured multimedia player when launching a course. This player has passed all security checks and is required for the online training.</li><li>Course progress information is available by clicking on the 'Progress' link on the left navigation bar or by going to the 'details' link under 'Syllabus' before you select a course.</li><li>To improve our service and course content, please provide us with feedback using the 'Feedback' link on the left navigation bar.</li><li>Thanks!</li></ul>

NEXT PAGE

### My Courses

Click on a Course title below to begin your training -

Date Created Date Expired Date Accessed Syllabus/Progress

[Note: All dates/times are in Eastern Time]

#### Courses Available

▶ <a href="#">NSC Defensive Driving Course 9th Edition</a>	9/8/2011	9/7/2012	--	<a href="#">details</a>
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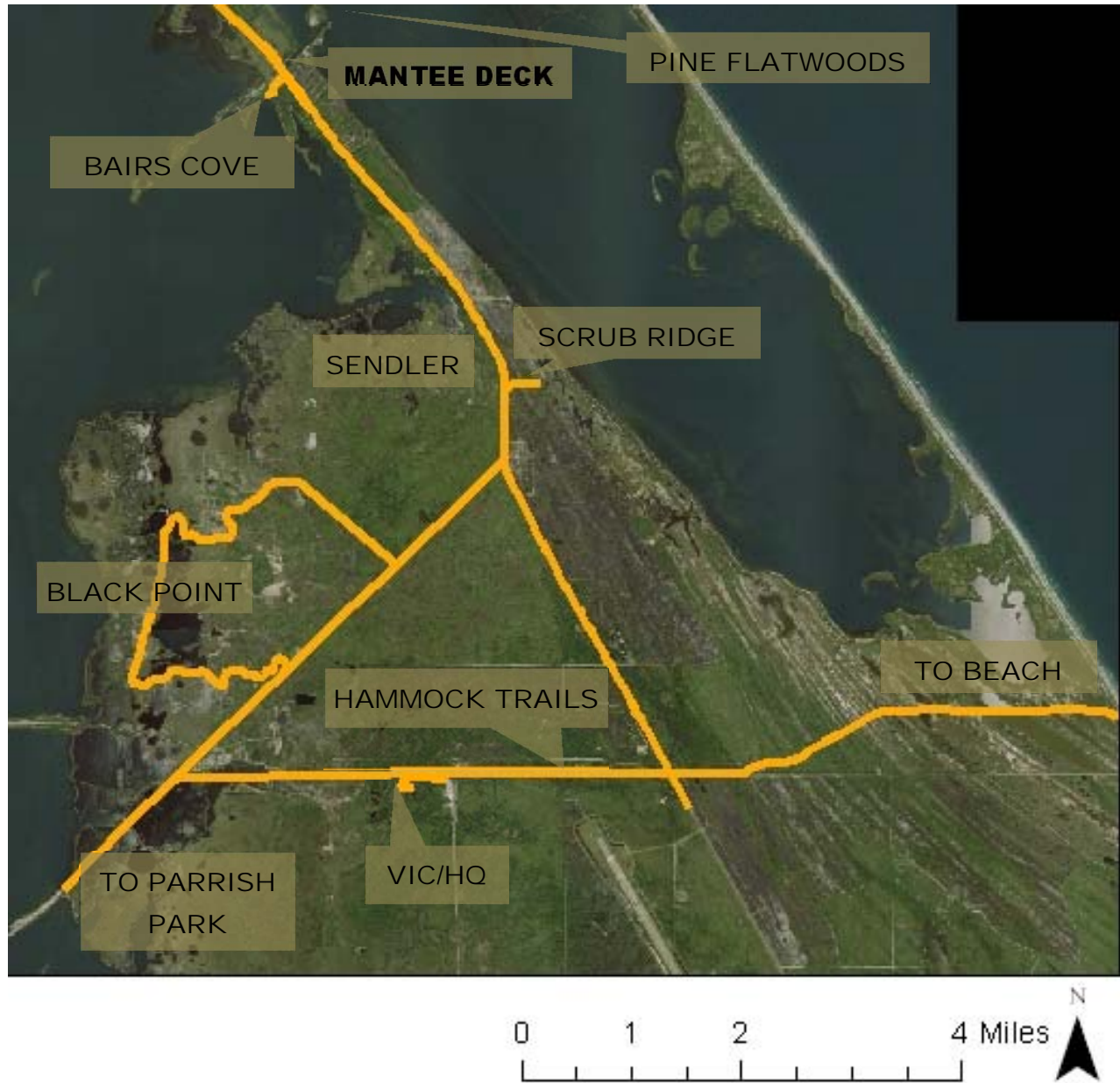
**NOTE: YOU MAY USE THE DETAILS LINK, UNDER SYLLABUS/PROGRESS, TO VIEW YOUR COMPLETION STATUS**

If you cannot finish the training in one session you can close and when you log in to the NSC Defensive Driving Course it will automatically bring you back to where you stopped.

---

9/11 ...Vehicle Training Request and Documentation Form "Online defensive driving training is available through the Department of Interior Learning Management System (DOI ILearn). You can use the DOI ILearn catalog to search for "defensive driving." The course that meets DOI training requirements is named "NSC Defensive Driving II." Department of Interior Learning Management System - DOI Learn

## F. Touring Roads Map



### **Bus Touring Roads**

- Bair's Cove Boat Ramp
- Beach Road & Beach Parking Lots; Past Fee Station
- Black Point Wildlife Drive
- Manatee Observation Deck
- Oak/Palm Hammock Parking Lot
- Parrish Park East of Max Brewer Bridge
- Pine Flatwoods
- Refuge Headquarters Area
- Refuge Visitor Center
- Sandler Education Post
- Scrub Ridge Trail Road / Parking Lot
- SR 3
- SR 402
- SR 406

STOPPING ALONG MAIN HIGHWAYS (SR 402, SR 406, AND SR 3) IS PROHIBITED INCLUDING PULLING OFF ONTO SHOULDER.

## **G. Rules of the Road for Non-CDL Vehicles**

Please read the Illinois Rules of the Road for Non-CDL Vehicles located in the appendix of this training booklet. It provides useful information for operating large vehicles.



### Pre-Departure

1. Keys are located in Visitor Center kitchen closet
2. cursory check of vehicle for
  - a. Inflated tires
  - b. Mirrors in good working condition
  - c. Windshield wipers in good working condition
  - d. General dents or scratched
  - e. Properly working gauges and instruments
  - f. Sufficient amount of fuel for trip
  - g. First kit, AED, emergency warning equipment, cell phone, and emergency contact list are aboard bus
3. Unlock emergency door
4. Before passengers board, remove any trash or left belongings

### Departure & Touring

1. Pull vehicle to front of Visitor Center for boarding
2. Stand by vehicle door to assist passengers loading and take care of any issues or concerns
3. Review the following with passengers prior to departure
  - a. Location of emergency exits, first aid kit, AED, fire extinguisher, and emergency contact list
  - b. Convey to passengers an overview of the tour including duration and locations of tour
  - c. Remind passengers that they are not stand while the bus is in motion
  - d. Advise passenger to be careful when exiting the bus during tour. Specifically:
    - i. Watch for other passing vehicles
    - ii. Keep an eye for general wildlife; specifically fire ant mounds when you step

- iii. While on dikes, be mindful of the edge of the road
- 4. Good practices while driving and touring
  - a. Keep vehicle door closed while in motion and close door when at stopping points
  - b. Be mindful of the width of the road when stopping or pulling over. Only pull over where it is safe, the road is wide enough, and when other vehicles are still able to pass
  - c. Do not stop and pull over when driving along the main highways: SR 402, SR 406, and SR 3

## **Post Tour**

1. Pull-up to front of Visitor Center to unload passengers
2. Stand by vehicle door to assist passengers when exiting bus
3. Check bus for any left belongings and remove all trash
4. Report any vehicle issues or low fuel to Refuge staff member
5. Return empty bus to gravel, overflow parking lot at Visitor Center
6. Return keys to proper locations

## I. Emergency and Incident Procedures

### I. Emergency Procedures

- A contact list of names and numbers to remain on the vehicle at all times. This list will indicate who to call and in what order.
- A report must be complete for any incident. If it is the only resulting damage is a scratch, an in-house report must be filed.
- Acts determined to be negligent may result in revocation of driving privileges.
- Below are general procedures if an incident occurs.
  1. EMERGENCY: Foremost, call 911 for emergency incidents.
  2. JURISDICTIONAL LAW ENFORCEMENT: Be cognizant of what law enforcement district you are in when the incident occurs. If you are at Parrish Park, make sure to call the City of Titusville police. If you are on Refuge property, be sure contact Kennedy Space Center Security.
  3. REFUGE LAW ENFORCEMENT: For all significant incidents, and any incident involving another vehicle, you must contact a Refuge law enforcement officer.
  4. REFUGE STAFF: After emergency services, Refuge law enforcement, and appropriate jurisdictional law enforcement are contacted, contact Refuge Public Use Staff.

### II. Mechanical Breakdowns or Failures

- A roadside emergency kit will be located in the vehicle to be used if the vehicle becomes disabled. Assess situation and determine proper warning devices to use from turning on emergency flashers to setting out reflective warning signs. A general rule of thumb is to place emergency warning devices 100 feet in both directions from the vehicle towards approaching traffic.
- Do not attempt to fix any mechanical breakdowns including but not limited to changing tires.
- If possible, drive disabled vehicle to a safe area. Contact Refuge Public Use Staff and USFWS law enforcement. Assess situation to determine if it is safer for passengers to remain on the bus or get off.

### III. Emergency Contact List

(To remain on vehicle)

#### I. Emergency Procedures

**Step 1:**

**Emergency on Refuge property (Ambulance, Security, Fire) call:**

**Kennedy Space Center Dispatch: 321-867-7911.**

**Step 2:**

Contact USFWS law enforcement officers after calling KSC dispatch. Leave detailed voice message if no answer.

Jane Whaley: 321- 403-7634 (Cell)  
321-861-2805 (Office)

Phil Amoroso: 321- 403-9182 (Cell)  
321- 861-2379 (Office)

**Step 3:**

Contact designated Public Use Supervisor. If no answer, leave detailed message.

Nancy Corona: 321-863-9625 (Cell)  
321-861-0668 (Office)

Sandy Mickey: 321-403-7631 (Cell)  
321-861-2384 (Office)

Visitor Center Desk: 321-861-0669

Headquarters Receptionist (Monday – Friday): 321-861-0667

**Emergency off Refuge property: Call 911**

Brevard County Titusville Police: 321-264-7801

Brevard County Sheriff's: 321-264-5100

Volusia County Sheriff's Dispatch: 386-423-3888 - New Smyrna Beach

#### II. Procedures for non-emergency injury or property damage

**All injuries and damage to property must be reported immediately to MINWR law enforcement and MINWR management.**

**Step 1:**

Call USFWS law enforcement officers. Leave a detailed voice message if no answer.

Jane Whaley: 321- 403-7634 (Cell)  
321- 861-2805 (Office)

Phil Amoroso: 321-403-9182 (Cell)  
321- 861-2379 (Office)

**Step 2:**

Contact designated Public Use supervisor. If no answer, leave detailed message.

Nancy Corona: 321-863-9625 (Cell)  
321-861-0668 (Office)

Sandy Mickey: 321-403-7631 (Cell)  
321-861-2384 (Office)

Visitor Center Desk: 321-861-0669

Headquarters Receptionist (Monday – Friday): 321-861-0667

FWC Dispatch: 407-275- 4150 (Florida Fish and Wildlife Conservation Commission)

## **J. Tour Program Approval Form**

### **Merritt Island National Wildlife Refuge 14-Passenger Bus Program Approval Form**

Name:

Contact information:

Today's Date:

Date of Use (at least 2 weeks in advance):

Description of program below, please include the following:

- How the program supports the refuge's goals of either 1) scrub jays and their habitat 2) waterfowl and wetlands 3) federally-listed threatened or endangered species. Few other programs will be approved.
- Program purpose and goal
- Precise program route and stops
- Date, time, and duration of program
- Frequency of program

Sandy Mickey: Sandra\_Mickey@fws.gov or 321-861-2384  
Layne Hamilton: Layne\_Hamilton@fws.gov or 321-861-0667

## K. Vehicle Specifications

<b>Fuel tank capacity</b>	40 gallons
<b>Vehicle height</b>	107" / 8' 11"
<b>Vehicle length</b>	255" / 21' 3"
<b>Vehicle width</b>	107.5" / 8' 11.5" (mirror to mirror)
<b>Recommended tire pressure</b>	Front (65PSI) / Rear (60PSI)

**MINWR 14 Passenger Bus Operator Training Completion Check list**

**Trainee's Name:** \_\_\_\_\_

- ☐ Trainee has attended Refuge sponsored bus operator training
- ☐ Trainee has completed online defensive driver training course
- ☐ Trainee has completed and passed background check
- ☐ Trainee has presented a valid US driver's license to a Refuge staff member
- ☐ Trainee has presented a 3-year driving record history to the Refuge staff member and it has been approved
- ☐ Trainee is first aid, CPR, and AED certified



