U.S. Fish and Wildlife Service

Regional Alternative Transportation Evaluation Report – Region 4

August 15, 2013

Visitors shuttling to Wassaw Island NWR during Refuge Week 2012 (Source: FWS Region 4)

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The U.S. Fish and Wildlife Service (FWS) and the U.S. Department of Transportation (DOT) Volpe Center (Volpe Center) conducted a regional alternative transportation evaluation (RATE) in Region 4, which is comprised of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, as well as the Commonwealth of Puerto Rico and the U.S. Virgin Islands. The RATE helps to ensure effective consideration and integration of alternative transportation systems into the goals and recommendations of the Region 4 LRTP. The Region 4 RATE also serves as a pilot for the integration of ATS into the National FWS Long Range Transportation Plan (LRTP) and provided lessons on how ATS may be instituted more broadly across Region 4.

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Contents

Overview

The U.S. Fish and Wildlife Service (FWS) and the U.S. Department of Transportation (DOT) Volpe Center (Volpe Center) conducted a regional alternative transportation evaluation (RATE) in the Southeast Region, Region 4, in late 2012 and 2013. The purpose of this report is to describe the evaluation activities conducted in Region 4, identify best practices of alternative transportation systems (ATS, Box 1), and provide lessons and tools on how ATS may be instituted more broadly across Region 4. The Region 4 RATE also serves as a pilot for the integration of ATS into the National FWS Long Range Transportation Plan (LRTP).

The report consists of three primary sections:

1. Key themes that describe how ATS is currently used or could be potentially used in Region 4;
2. Data and findings from the ATS Questionnaire, distributed to all Region 4 stations;
3. Tools for using ATS in Region 4, including improving access by underserved populations, identifying funding sources, and applying the project selection process to multimodal projects; and
4. Case studies and regional opportunities, demonstrating the current application of and future needs for ATS in Region 4.

This RATE report thus provides a general overview of the state of ATS in Region 4, data to support these themes, and an array of tools and resources to help regional and station staff enhance the use of ATS.

RATE Background and Methodology

Region 4 of the FWS is comprised of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, as well as the Commonwealth of Puerto Rico and the U.S. Virgin Islands. The RATE helps to ensure effective consideration and integration of ATS into the goals and recommendations of the Region 4 LRTP. Staff from the Volpe Center, FWS Region 4, and Western Federal Lands Highway Division (WFLHD) met in Atlanta, Georgia, in October 2012, to discuss alternative transportation needs and constraints in the region and to develop an ATS Questionnaire (this meeting was part of the LRTP kick-off meeting). Volpe Center staff conducted in-depth calls with Crystal River National Wildlife Refuge (NWR), Eufaula NWR, Hobe Sound NWR, Pinckney Island NWR, and Red River NWR to identify specific opportunities for ATS in these and other stations.

Box 1: What are Alternative Transportation Systems?

Alternative transportation systems generally include any publically or privately owned travel means other than personal automobile, such as:

- Motorized transportation systems operating internally within stations
- Shuttles and van transit connecting stations with other destinations
- Regional transit connections (bus, light rail, trolley, commuter rail, passenger rail)
- Bicycle and pedestrian infrastructure (sidewalks, paths, bicycle lanes, regional trails)
- Water-based transportation

FWS Headquarters and Regional staff approached the RATE with the understanding that increased ATS would be beneficial to Region 4 stations and complement Service-wide goals, particularly those contained

in the Region 4 LRTP. First, the use of transit, non-motorized, and water-based modes supports natural resource protection. By reducing the use of personal automobiles, FWS can also reduce the impacts that these vehicles have upon natural resources. Vehicular resource impacts include wildlife collisions, invasive species, noise pollution, particulate emissions, erosion, and pollutants that can enter the soil or water. Over the long term, increasing ATS for stations with increasing visitation can minimize the need for new roads or parking, thus preserving more area for wildlife habitat. ATS is a critical visitor management tool for station staff facing increasing visitor demands and limited resources. The use of transit enhances visitors' understanding of the station's natural resources by facilitating interpretive tours or directing visitors for special events. Signage and orientation information directed at non- automobile modes can also help integrate these modes effectively into station transportation. Finally, ATS reduces the Service's carbon footprint, decreases carbon-based fuel consumption, enhances accessibility, and reduces air pollutants emitted from vehicles.

Region 4 Themes

The refuges of Region 4 are the most numerous of any FWS region, and they are diverse in their characteristics and needs. However, based regional characteristics and the responses to the Transportation Questionnaire, there are several types of ATS that may be especially effective within Region 4. This section identifies some themes in the region's needs for ATS, as well as its opportunities and limitations.

Water-based access is likely the most widespread mode of ATS across Region 4 refuges.

More than half of the stations in Region 4 reported that its visitors accessed the station using water-based transportation modes; in many refuges, water-based transport is the primary or only method of access. Among all stations, the average percentage of visitors who use water-based transportation for station access is 32 percent. Most visitors likely use personal motor vehicles for water-based access, but canoes and kayaks are also prevalent in Region 4 refuges. Depending on the station's goals, the station may choose to encourage more water-based access in ways that are aligned with resource protection or to encourage non-motorized water-based transport through additional infrastructure, interpretation, and/or special programs.

Refuge staff may increase use of water-based ATS modes by:

- Encouraging non-motorized water-based transportation, including canoes and kayaks, to minimize noise, wake, and pollution to refuge waters.
- Developing infrastructure to help accommodate non-motorized water-based transportation includes docks, boat launches, trailer parking, water trails and blueways, and interpretive kiosks and birding blinds accessible from the water.
- Provide access via ferries or boat tours.

Fishing and hunting are highly popular activities that may benefit from targeted use of ATS.

Fishing is the most popular visitor activity at stations in Region 4, followed closely by hunting. Both groups make up significant percentages of station visitation among questionnaire respondents. Fishing and hunting require specialized and sometimes bulky or heavy equipment, which may encourage anglers and hunters to use their own private vehicles rather than an alternative mode. However, ATS is a critical tool to accommodate the high number of anglers through water-based modes.

Refuge staff may encourage ATS use by anglers and hunters by:

- Making fishing opportunities (piers, docks) and hunting blinds accessible to pedestrians in stations that are accessible by bicycle or by foot to encourage these opportunities for those without vehicles.
- Use transit to help manage congestion and improve the educational components of popular fishing and hunting events, especially those focused on youth.

Stations near water bodies are vulnerable to the impacts of climate change, and ATS can help stations be more resilient.

Due to their locations near major water bodies or wetlands, stations in Region 4 are especially vulnerable to the impacts of climate change, including storm surges, flooding, and erosion. These impacts result in the increasingly frequent need to repair or replace roads and parking lots at significant cost to FWS and U.S. taxpayers. To some degree, these assets can be replaced with ATS modes that are more adaptive to climatic impacts. The following are examples of ATS that can cover the functions of vulnerable infrastructure:

- Bus or tram tours on administrative roads that can be managed for flexible use depending on weather conditions;
- Trails or boardwalks to access frequently flooded areas;
- Canoe and kayak trails accessible from floating docks that can be removed during storm events or seasonally; and
- Use of off-site parking with trams to transport visitors to trails, beaches, and other amenities. This can prevent the need for building or repairing parking lots in vulnerable areas.

Many refuges in Region 4 are located far from urban areas and therefore are not accessible by walking, bicycling, or transit.

The average distance between Region 4 stations and their nearest metropolitan area is 48 miles. Approximately 10 percent of respondents noted that their nearest metropolitan area was 100 or more miles away from the station. Due to these distances, most stations are not going to be within the service areas of public transit systems (only three percent of stations are within one-half mile of a transit station, 11 percent are within three miles). Instead, stations may be accessible by organized private transit from cities, including partnerships with schools and community groups for scheduled trips to refuges. The majority of stations indicated that its visitors were not familiar with transit or would not be inclined to bicycle, which may be due to the fact that visitors are not frequently coming from urban areas where transit and bicycle commuting are prevalent. (There are notable exceptions, described in the Selected Regional ATS Opportunities).

Gateway communities that are close enough to offer bicycle and pedestrian access to refuges are likely to be relatively low in population. For refuges that are in remote areas, ATS use may be limited to very seasonal use or special events.

Many refuges in Region 4 are located in milder climatic zones that are conducive to walk and bike year-round. Refuges can encourage walking and/or bicycling for transportation within the refuge through

providing safe trails and sidewalks, offering comfort stations and benches, and hosting interpretive walking tours.

Many station staff are simply unaware of how ATS could provide benefits to their stations.

With the exception of water-based transport, most refuges described limited, if any, ATS use. Notably, refuge staff responding to the online questionnaire do not prioritize adding new ATS infrastructure as part of their refuge's transportation systems. This may indicate that certain ATS modes may not be appropriate or feasible on some refuges. However, the limited interest in ATS may also suggest a need for additional outreach and education among refuge staff as to how ATS can help address common management concerns. Table 1 lists management needs, which are either common across the Service or noted in the Region 4 questionnaire, and matches those needs with ATS solutions.

Table 1: Management Needs and ATS Solutions

Management Need	ATS Solution
Funding shortages	Use shuttles to offsite parking for peak weekends and special events to avoid the need to build and maintain new parking lots
Condition of existing roads and trails	Limit refuge roads to transit, pedestrian, and bicycle roads (year-round or seasonally) to reduce wear-and-tear on roadways.
Staff capacity shortages	Limit vehicular use on refuge roads to reduce workload for staff in terms of road maintenance. Friends groups and volunteers may be able to help coordinate transit for special events and/or lead walking tours of the refuge.
Signage and visitor orientation	Develop signage, maps, and other wayfinding tools for pedestrians to orient visitors towards key refuge amenities. Smartphones can guide both pedestrians and transit users to and within the refuge.

ATS often works as one of many elements to address some of the larger management challenges. However, ATS solutions may be easier or less expensive to implement (such as simple pedestrian improvements or a two-day lease of school buses) than major road and parking construction.

The use of transit for special events may be the most appropriate way to bring transit into Region 4.

Thirteen percent of refuges already use transit for special events. They may rent private shuttles or buses, borrow vehicles from other refuges or local partners, or use vehicles owned by the refuge or friends groups. Transit during special events helps introduce the concept of transit to refuges without committing to vehicle ownership and maintenance. It also brings several benefits of transit, including parking management and access to restricted parts of the refuge, to a discreet event where these benefits are most needed.

A few refuges are within a reasonable driving distance for day trip from a major metropolitan area but not within the service area of a public transit system. Refuge staff may be able to partner with community groups, friends groups, and nature-based education non-governmental organizations to arrange buses for access to the refuge on weekends and/or for special events. The transportation could be coupled with refuge tours, hikes, and other educational or interpretive programs.

Local transit service already running near a station offers a simple opportunity for visitors to access a refuge without private vehicles.

While only a small number of stations have such service, these stations may improve and diversify their access through the following strategies:

- Promote the transit service on the refuge website or through other media;
- Work with the transit agency to make schedule adjustments that better accommodate refuge visitors and employees.
- Work with the transit agency to discuss whether demand from the refuge may be great enough to extend service closer to the refuge (for refuges that are located between one and three miles from a transit station); and
- Partner with the transit agency to pilot new routes on a seasonal or special event basis.

Small-scale improvements in bicycle and pedestrian infrastructure and connectivity would serve a signficant number of visitors who already use these modes.

Approximately 20 percent of refuges within Region 4 are within three miles of a regional, multi-use trail, and approximately 13 percent are within one-half mile of such a trail. Non-motorized transportation infrastructure also include sidewalks, bicycle lanes, and hiking trail networks; local governments, conservation groups, state parks, and others may own and maintain these networks. Refuge staff can work with these partners to ensure connectivity between the refuge and other non-motorized networks. This may include adding safe pedestrian crossings, bicycle racks, and signage to the trail networks, as well as listing the refuge location on local or regional trail maps. In instances where the refuge is near a regional trail, the refuge may add interpretative panels to the trail to extend the refuge experience in the surrounding community. With initiatives such as America's Great Outdoors gaining prominence among FWS management, regional trails can become increasingly important in offering Americans streamlined access to the public lands in their own backyards

The majority of refuges allow bicycling on all or parts of the refuge. Bicycling allows visitors to access a larger area of the refuge while reducing vehicular impacts such as noise, air pollution, and need for parking. Walking similarly avoids these vehicular impacts, and both non-motorized modes give visitors a closer view of wildlife. When planning for non-motorized travel within refuges, staff must consider how to restrict visitor access to closed areas of the refuge, using gates, signage, and closure of parking areas near restricted areas.

ATS Questionnaire Analysis

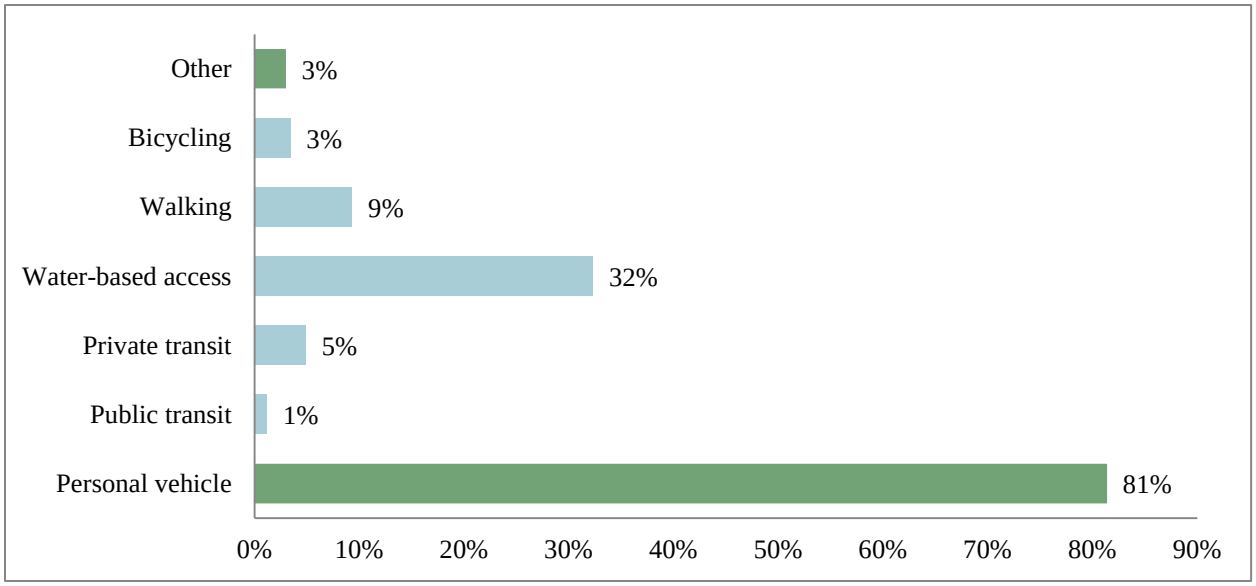
The RATE team developed a questionnaire to collect data on transportation at FWS stations, focusing on transportation challenges and opportunities at Region 4 stations.[1] This section of the RATE report focuses on responses from ATS-focused questions; data from the rest of the questionnaire is included in the Region 4 LRTP and will also be used for regional and project planning and prioritization.

One hundred sixteen of the 133 Region 4 stations responded to the questionnaire, a response rate of 87 percent, and half of the 27 stations that did not respond are closed to public use. The data collected provide a view of alternative transportation and specific project opportunities across the region and at individual stations.

While most visitors access stations by personal vehicle, water-based access is the most popular alternative transportation mode.

Personal vehicles are, by far, the most popular way for visitors to access a refuge, according to questionnaire responses on visitor access mode. The distribution of visitor mode responses are illustrated in Figure 1 below, with the alternative transportation modes colored in green. Water-based access (inclusive of motorized, human, or sail-powered vessels) was the second most popular mode of transportation, with 32 percent of visitors using water-based access. Walking was at nine percent; private transit (such as school buses or organized tours) at five percent; and cycling, transit, and "other" modes all had an average of three percent or less. The results show that water access was the most popular alternative transportation mode, which is to be expected given the proximity of wetlands, bayous, rivers, and other water bodies to many stations in Region 4.

Figure 1: Visitor access mode (average percent) (n=112)



[1] Similar questionnaires gathered data on alternative transportation at other FWS regions, but the questionnaire for Region 4 was the first to incorporate a set of more structured and formal questions regarding general transportation needs. FWS developed these questions for the Road Inventory Program and included them with the RATE questionnaire to reduce the number of data calls sent to FWS station managers.

Many stations rely on transit and non-motorized modes for access and special events.

Distance from Transit

As seen in Figure 2, the vast majority (89%) of Region 4 stations are more than three miles away from transit, which is considered too far for most transit riders to walk or bicycle.[2] Six refuges are within relatively easy walking distance (less than a mile) of transit service and could benefit from coordination with their local transit agencies.

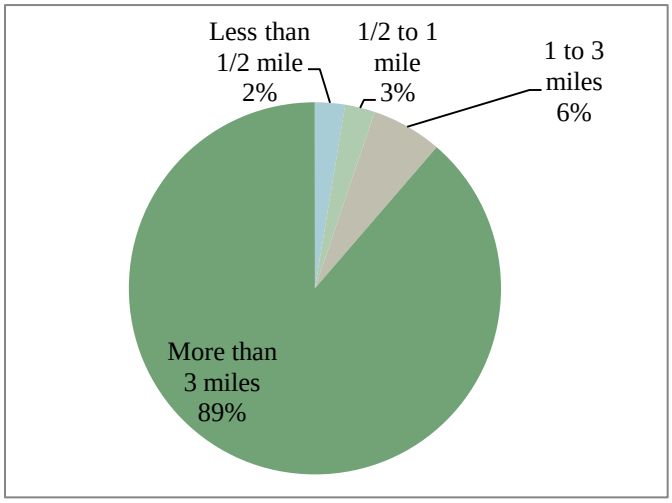


Figure 2: Station distance from transit service (n=114)

Groups such as senior centers and school districts also organize private transit service to move a large number of people to and within stations in an organized and efficient manner. Forty-six percent of respondents report that groups visiting their stations use transit vehicles.

Some refuges in Region 4 already operate transit service to move visitors from point to point within stations. As seen in Figure 3, 19 percent of refuges (20 refuges) have transit operating for at least part of the year. Special event transit was the most popular form of transit, with 13 percent of refuges using some form of transit for their special events. Transit service can be used to effectively manage a few days of exceptionally high demand beyond the levels to which a station's road and parking system is designed. Three percent of refuges use transit to provide transportation during peak seasons only, and an additional three percent use transit throughout the year. A large majority of stations (81 percent) do not currently have transit service at any point during the year. However, these refuges may look to the 20 refuges with some existing transit service to see if these types of transit may offer opportunities on their stations. These stations and the type of

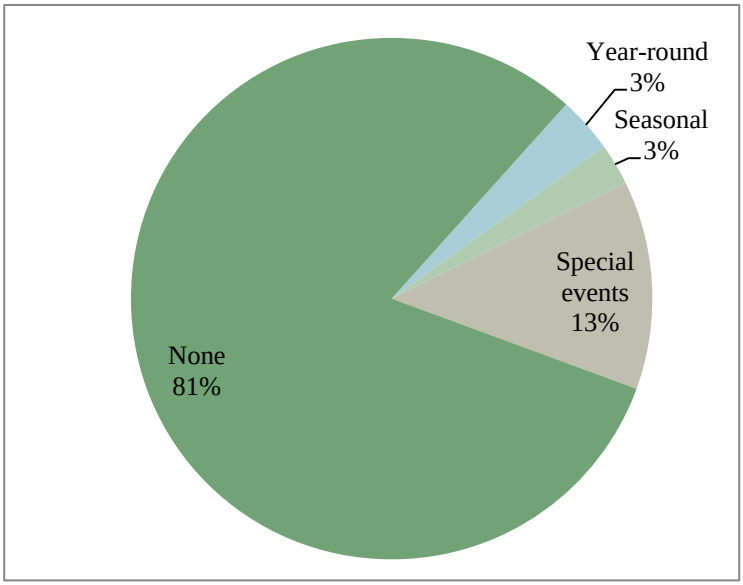


Figure 3: Refuges with existing transit (n=114)

[2] Some cyclists may be willing and able to put their bicycle on a transit vehicle and use it to reach a refuge that is further from a transit stop, but bike policies vary between transit agencies and the distance still poses a wayfinding challenge. This analysis assumes that transit stations located more than three miles from stations will require additional infrastructure or coordination efforts to be a viable connection.

transit service they provide are shown in Table 2 below.

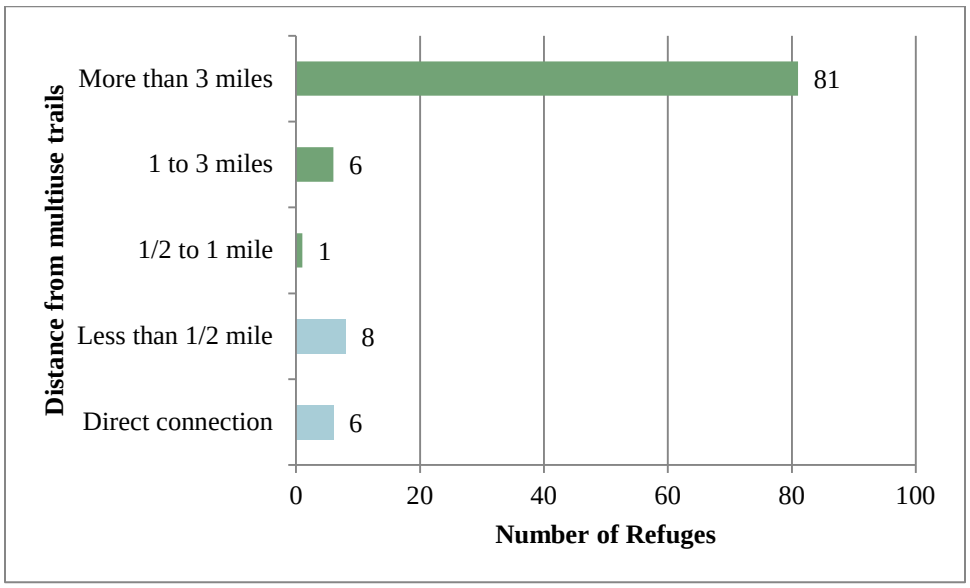
Table 2: Refuges with existing transit service (n=20)

Station	Transit Service
Okefenokee NWR	Special events
Ernest F. Hollings NWR	Special events
Cape Romain NWR	Special events
Mattamuskeet NWR	Special events
J.N. "Ding" Darling NWR	Year-round
Alligator River NWR	Seasonal and Special Events
Cahaba River NWR	Special events
Big Branch Marsh NWR	Special events
Tensas River NWR	Special events
Merritt Island NWR	Year-round
Pelican Island NWR	Seasonal
Grand Bay NWR	Special events
Mississippi Sandhill Crane NWR	Seasonal and Special events
Crystal River NWR	Special events
Santee NWR	Year-round
Terry Peacock NWR	Special events
Waccamaw NWR	Year-round
Pinckney Island NWR	Special events
Savannah NWR	Special events
Archie Carr NWR	Special events

Distance from Regional Trails

Regional trails provide a paved surface for pedestrian and cycling recreation and transportation that is separate from motorized vehicle traffic. Regional trails also offer safe access for all types of users, including families and older adults, to access stations without the use of a personal vehicle. As illustrated in Figure 4, a large majority of stations (79 percent, or 81 stations) are more than three miles from a regional trail, a distance that is too far most pedestrians to walk and may be too far for some cyclists. Seven stations are between one-half mile and three miles from a trail, which would be a reasonable distance for cycling but which may require directional signage. Some pedestrians may also be willing to cover this distance to access a station by foot. Eight refuges are within a half mile of a trail, and six refuges are directly connected to a trail. These are colored in green in Figure 4 below. These fourteen refuges within a half mile of or connected to a trail offer very easy access for pedestrians and cyclists..

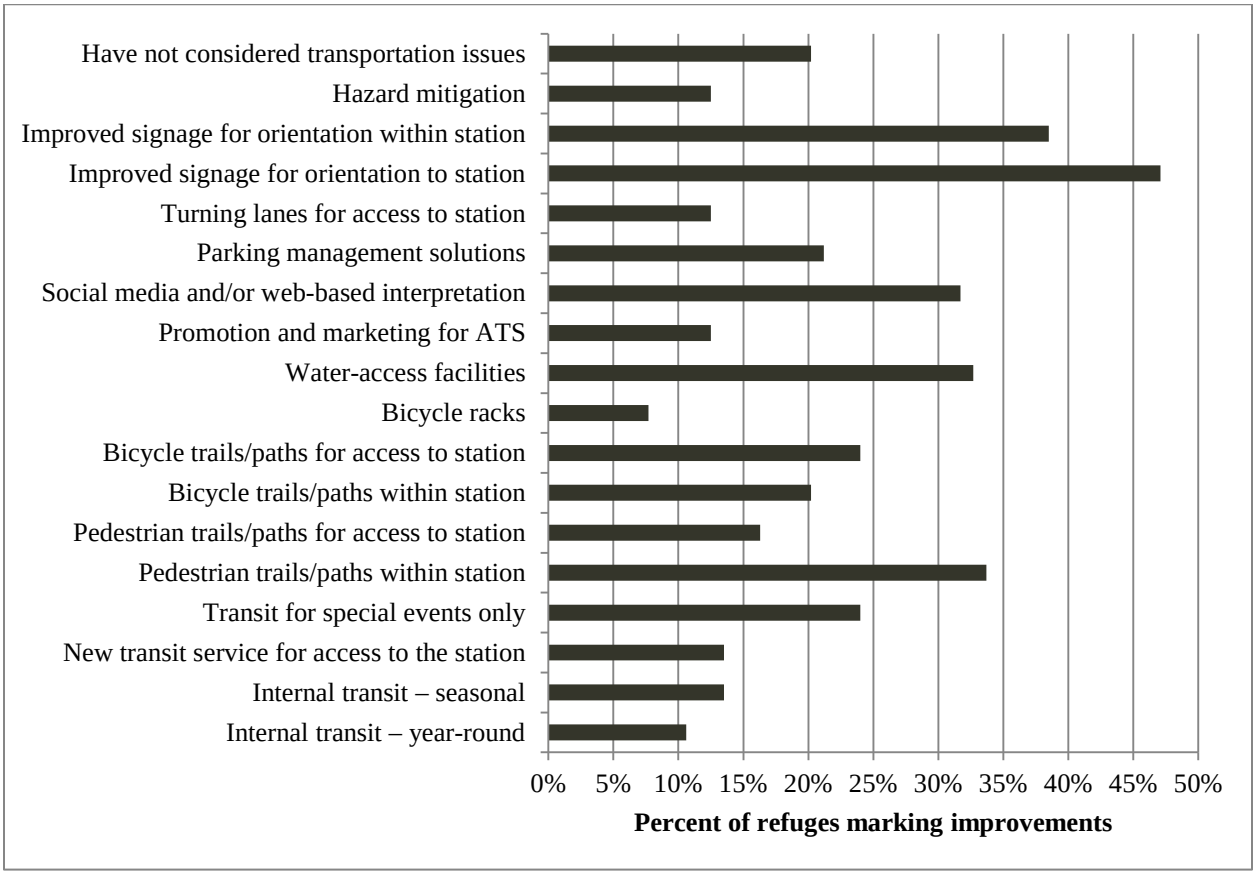
Figure 4: Refuge distance from regional trails (n=102)



Station managers call for better signage, water-access facilities, and pedestrian trails.

The questionnaire provided a list of possible transportation improvements and asked respondents to select those that would improve the visitor program at their station. The results are shared in Figure 5 below. The two most commonly cited transportation improvements were better signage within the station and leading to the station. Refuge managers also cited repairing access roads to stations as a significant transportation need. Improved water-access facilities, online interpretation, and pedestrian trails within the station were other popular responses. These results indicate that managers perceive a strong need for improved orientation and promotion of their refuges, through signage and social media, as well as through easily-navigable and high-profile visitor amenities like pedestrian paths and transit for special events. While not all refuges called for improvements to bicycle infrastructure, nearly a quarter of respondents did note that new bicycle paths would be a benefit to their station.

Figure 5: Potential transportation improvements to improve visitor programs (n=104)



The questionnaire next asked managers to describe the greatest opportunity for alternative transportation at their stations. The 65 respondents who answered this question noted varied and creative ATS opportunities. Some saw an opportunity in using transit with interpretation for guided bus or boat tours. Other managers called for trail connections between their internal refuge trail networks and the region trail and transportation system. Respondents also requested trams and other lightweight transit vehicles (such as 14 passenger vans). Several refuge managers responded that they did not see a need for alternative transportation at their refuge as of the time of the survey, while others said that their greatest opportunities were to provide road-based access to visitors, such as paving gravel access roads or building new parking. Others saw projects to improve FWS transportation as the top priority, such as a project to build an access bridge that could be crossed by heavier supply vehicles.

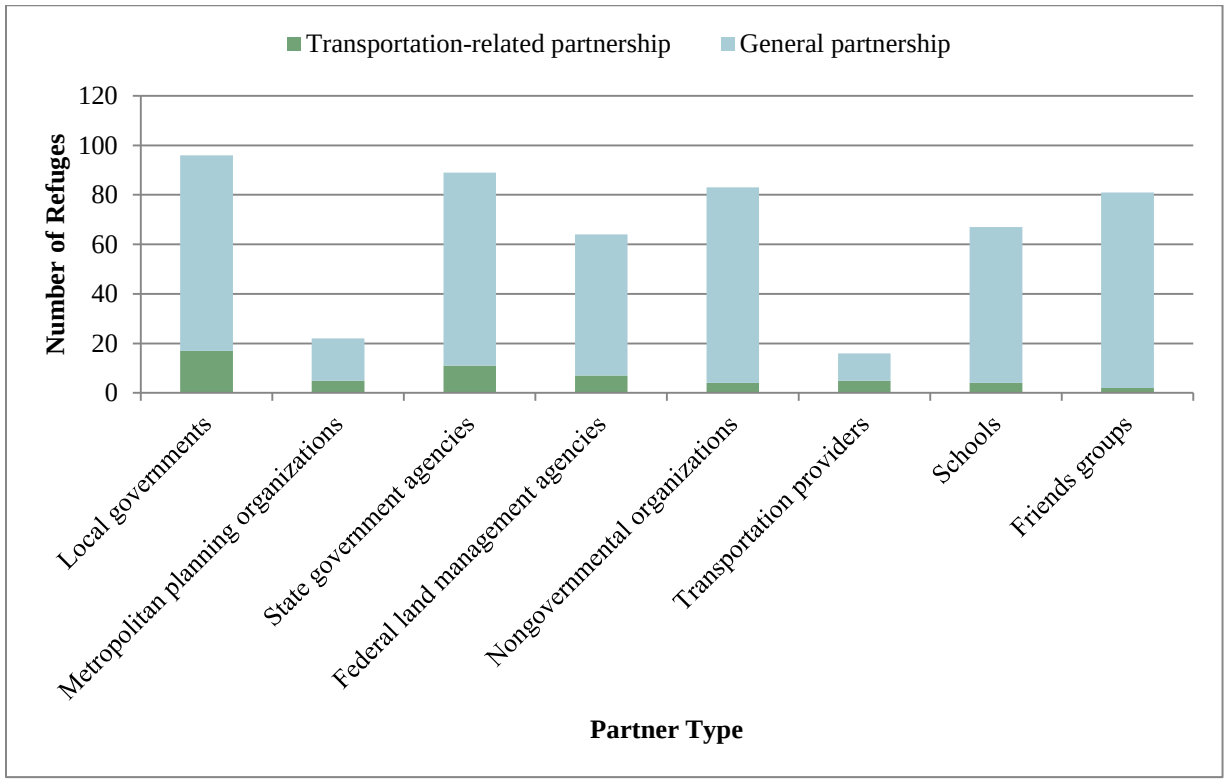
Many managers see the benefits of both conventional and creative ATS solutions on their refuges.

While not all managers recognized an immediate value of ATS at their station, many did see the benefits of both conventional and creative ATS solutions on their refuges. Through promoting these ideas and other current best practices, more managers may also realize the value of how ATS can improve transportation at their stations

Stations frequently rely on partners but often do not consider transportation partnership opportunities.

Most respondents have established several partnerships to accomplish their station's goals. The questionnaire asked if and how transportation was a component of these partnerships. Stations are far more likely to have partnerships not specific to transportation, with most transportation-related partnerships formed with local governments. Transportation partnerships are varied and include support for new trails, turn lanes, and boat launches (for access to refuges) and school bus programs. As illustrated in Figure 6, local governments are the most common overall and transportation partner, followed closely by state governments and non-governmental organizations.

Figure 6: General and transportation partnerships (n=98)



Partners can provide valuable transportation services to FWS stations, such as through providing additional parking or other transportation assistance during special events (nine respondents noted this type of partnership currently at their stations). The questionnaire asked FWS managers to report on how their stations handled periods of extremely high visitation, such as special events. Nine of the responding stations (22 percent) responded that they used partnerships to provide additional parking, such as having overflow parking at a school parking lot nearby.

Relationships and projects developed during planning stages may result in new funding opportunities in the future.

Although FWS stations are heavily involved with many partners to accomplish mutual day-to-day goals, few engage with long-term transportation planning efforts in their localities, regions, or states. Only 14 stations (13 percent) were aware of transportation studies performed by local governments and metropolitan

planning organizations. This represents a significant opportunity for refuge staff to learn more about these plans, as relationships and projects developed during planning stages may result in new funding opportunities in the future.

Additional findings

Among the other ATS questions in the questionnaire, the following are some interesting trends and highlighted responses:

- Transportation data collection is not universal at FWS stations; 33 percent of stations collect some form of car, bike, or pedestrian counts, and 67 percent have no transportation data collection. Only ten percent of stations collect data on vehicle collisions that happen within their boundaries.
- Forty-four percent of stations do not believe their refuge has a sufficient signage presence on access roads and trails. Installing and maintaining signs require close coordination with local and state DOTs.
- Water transportation and recreation is a very popular activity in Region 4. Sixty-nine percent of stations allow canoeing, kayaking or non-motorized boating throughout, while another 19 percent allow boating in some areas. Only three of the responding stations had no water suitable for boating.
- Bicycling is less popular than boating, but opportunities are available in Region 4. Forty-seven percent of stations allow cycling in general, and an additional 29 percent allow cycling in certain designated areas. Only 12 percent of the responding stations have prohibited cycling outright, and another 12 percent report having no suitable routes. Despite these opportunities few refuges report more than a few percentage points of their visitors who use bicycling to *access* the refuge.

ATS is currently used to solve many transportation issues and open up new opportunities to visitors across the region. Managers at these and other stations reported their ideas to improve or expand ATS service. These responses can be used to identify stations that could address a pressing transportation need using ATS now or in the future, and they can be used to identify projects or funding sources. More generally, the RATE results provide a picture of alternative transportation at Region 4 refuges, both in comparison to other FWS regions and as a current snapshot of current ATS conditions and trends in the region. These data inform findings, trends, and recommendations contained elsewhere in the RATE report.

Underserved Populations Analysis

Outreach to populations that are not currently visiting refuges is a formalized priority for the Department of the Interior, the Fish and Wildlife Service, and FWS Region 4. Alternative transportation is a way for the FWS to offer access to low-income, low-car ownership, and minority populations, and help them learn about and visit refuges. While transportation is not the only barrier to visits by these groups, resolving it opens refuges to many who could not otherwise reach them.

The RATE team selected three metropolitan areas in Region 4 to examine how ATS could be used to connect refuges to areas with high densities of underserved populations. The RATE team selected the metro areas of Savannah, Georgia; Southeast Florida; and New Orleans, Louisiana. The team selected

these areas based on large underserved populations, the refuges nearby, and proximity to ATS. The Volpe Center overlaid demographic data with transportation networks and refuge locations to create maps showing the location of refuges in relation to underserved populations, and to show how alternative transportation can be used to reach out to these groups.

The Volpe Center selected measurable proxies for underserved populations consistent with similar analyses for other FWS regions. The average number of cars per household, median household income, and percentage of non-white population served as the variables. The Volpe Center selected the 2011 American Community Survey at the block group level to best balance timeliness of data with high geographic resolution. The demographic data are displayed on maps beneath layers showing refuge locations, interstates and major highways, water and land trails, transit, and major bodies of water. These layers are available online or at request from a variety of academic and non-profit organizations and local governments. The maps show major concentrations of underserved populations with purple circles. Other areas of the maps show underserved populations but are not circled; these are areas may have very small or transient populations that are difficult to serve with ATS.

New Orleans

The New Orleans metropolitan area embraces the eastern half of Lake Pontchartrain and proceeds westward up the Mississippi River. The area is home to a diverse community of more than a million people, with millions more upstate toward Baton Rouge and to the east along the Gulf Coast. The population in the region is declining, with the greatest declines in the city of New Orleans itself. The communities in the area are surrounded by marshes, bayous, and forests managed by the FWS and others. These protected places provide havens for wildlife and help to maintain the biodiversity of the area. Natural areas are an asset to the complex hydrology of the region and help to regulate water levels and buffer storms. They also provide opportunities for boating, bird watching, hiking, fishing and other activities common across Region 4.

Bogue Chitto, Big Branch Marsh, and Bayou Sauvage NWRs extend north of the metro area along the I-10/I-59 corridor. All are managed under the Southeast Louisiana Complex, which engages with local communities, including underserved groups, through a variety of outreach programs. Most underserved people in the area live in New Orleans itself. The city is in some ways still recovering from the 2005 Hurricane Katrina, which devastated many poor and minority neighborhoods. Other populations of underserved communities include some neighborhoods in Kenner, a town to the west of New Orleans, and parts of Slidell, to the north of Lake Pontchartrain. Both of these areas area circled on the maps below.

Bayou Sauvage NWR is contained within the city of New Orleans and is less than a fifteen minute drive from the French Quarter. It is adjacent to New Orleans East neighborhood and is connected to the rest of the city by RTA's 60 Hayne route, which also runs as the 62 express and as the 63 at night. There are no paths or bike lanes leading to the refuge, but a safer cycling or walking route is possible by taking smaller residential streets. A quarter of refuge visitors participate in water recreation, so water access to the refuge via urban paddling trails could prove popular.

The refuge's close proximity to many underserved communities in the area is an opportunity for the FWS to easily engage these groups without requiring long trips that may dissuade potential visitors, as available leisure time is a major barrier to public lands visits. The refuge is already participating in some efforts, such as educational programming for schoolchildren. The refuge reports significant numbers of

low-income and minority populations are already using the refuge, indicating that the refuge's convenient location and popular activities are an asset to the underserved communities in the area (see Figure 7 and Figure 8).

Big Branch Marsh NWR is the largest stretch of undeveloped land on the north shore of Lake Pontchartrain. It preserves marsh ecosystems similar to Bayou Sauvage but is more removed from the region's population centers at about forty miles north of downtown New Orleans. It is still only five to ten miles from the centers of Slidell and Lacombe and their combined 35,000 residents. Some of the two towns' neighborhoods are directly adjacent to the refuges. Big Branch NWR is also easy for residents of Kenner, Louisiana, to reach as it lies due north for them at the end of the Lake Pontchartrain causeway. Bayou Sauvage NWR is closer but at the other end of the New Orleans core, which may pose a barrier during weekdays and other times of high traffic. The Southeast Louisiana Refuge Complex has developed Big Branch's visitor program more intensely than at other refuges, which may make it an attractive destination if education and interpretation are major goals of an underserved community access program.

The refuge reports that the largest share of their visitors live within ten miles. The refuge participates in the Urban Refuge program and has used transit to better serve special events. There is no regular transit service to or near the refuge and there are no bike lanes or multiuse paths. Local residents have a high rate of car ownership (see Figure 9), but the households that do have no car would be best served by special event transit service. The refuge marked improving access as its highest ATS priority, especially linking to the Tammany Trace trail.

Bogue Chitto NWR is further north than the other two refuges but it is still an easy day trip by car or private bus. It is also easily accessible to the Gulf Coast of Louisiana and Mississippi. Bogue Chitto provides a different set of ecosystems from the two refuges on the shore of Lake Pontchartrain. Water recreation is especially popular at the refuge, which reports that up to 90 percent of visitors participate in water recreation.

Due to the distance from most regional underserved populations, the refuge would best be reached with carpools, vans, or buses. The popularity of water recreation on the refuge and the refuge's existing water access and trails indicate that a program to engage underserved communities with canoeing or kayaking could be popular.

There are several refuges further afield from the metro area and are not included on the following maps. Although currently unreachable by any existing alternative transportation mode other than touring bike, Bayou Teche, Mandalay, Breton, and Delta NWRs are high-visitation coastal destinations still feasible as a long day trip from New Orleans. Organized buses, vans, or carpools would be the most effective way for the FWS to promote urban underserved community visits to these more rural refuges.

Figure 7: Median Household Income in the New Orleans Metro Area

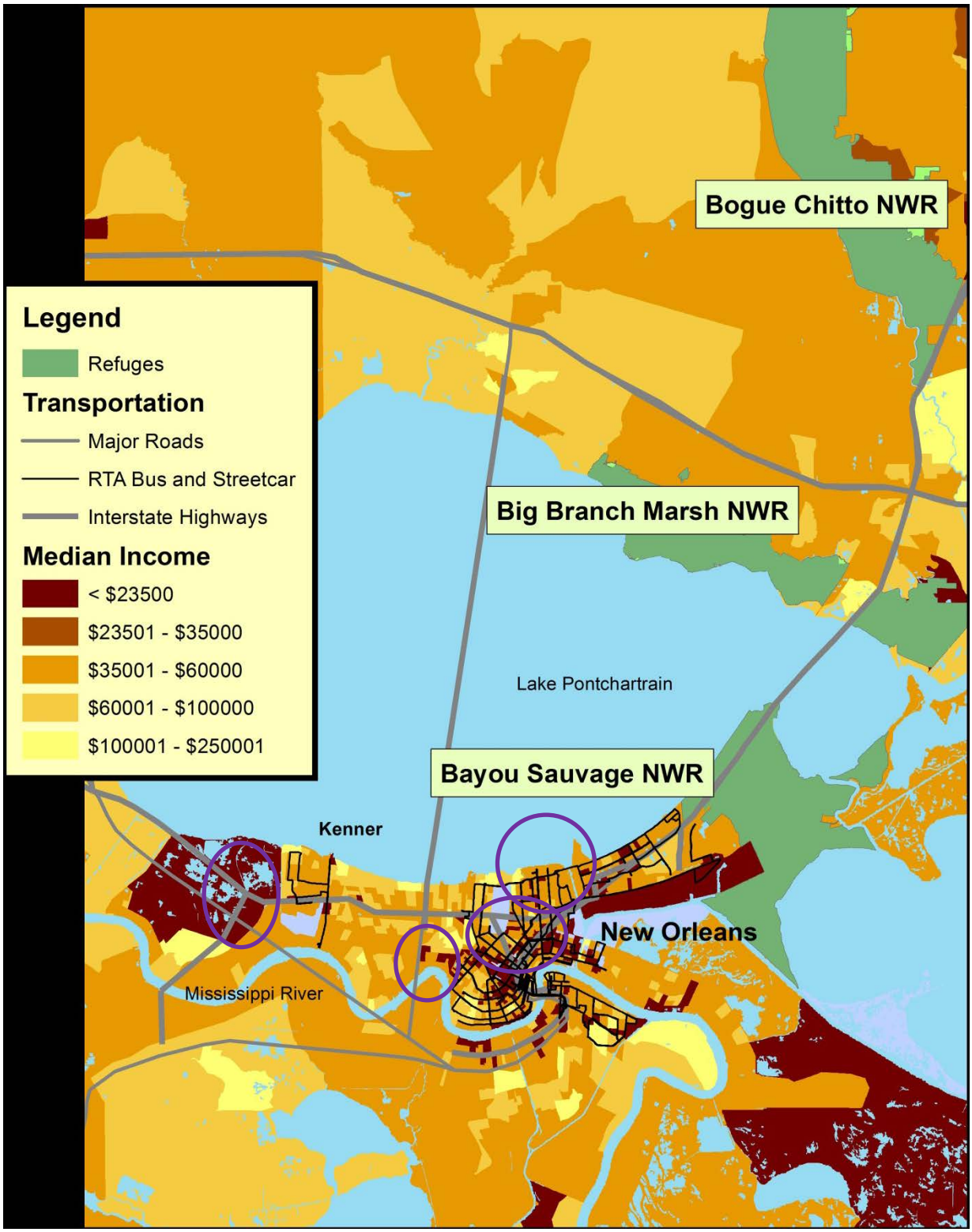


Figure 8: Non-White Population in the New Orleans Metro Area

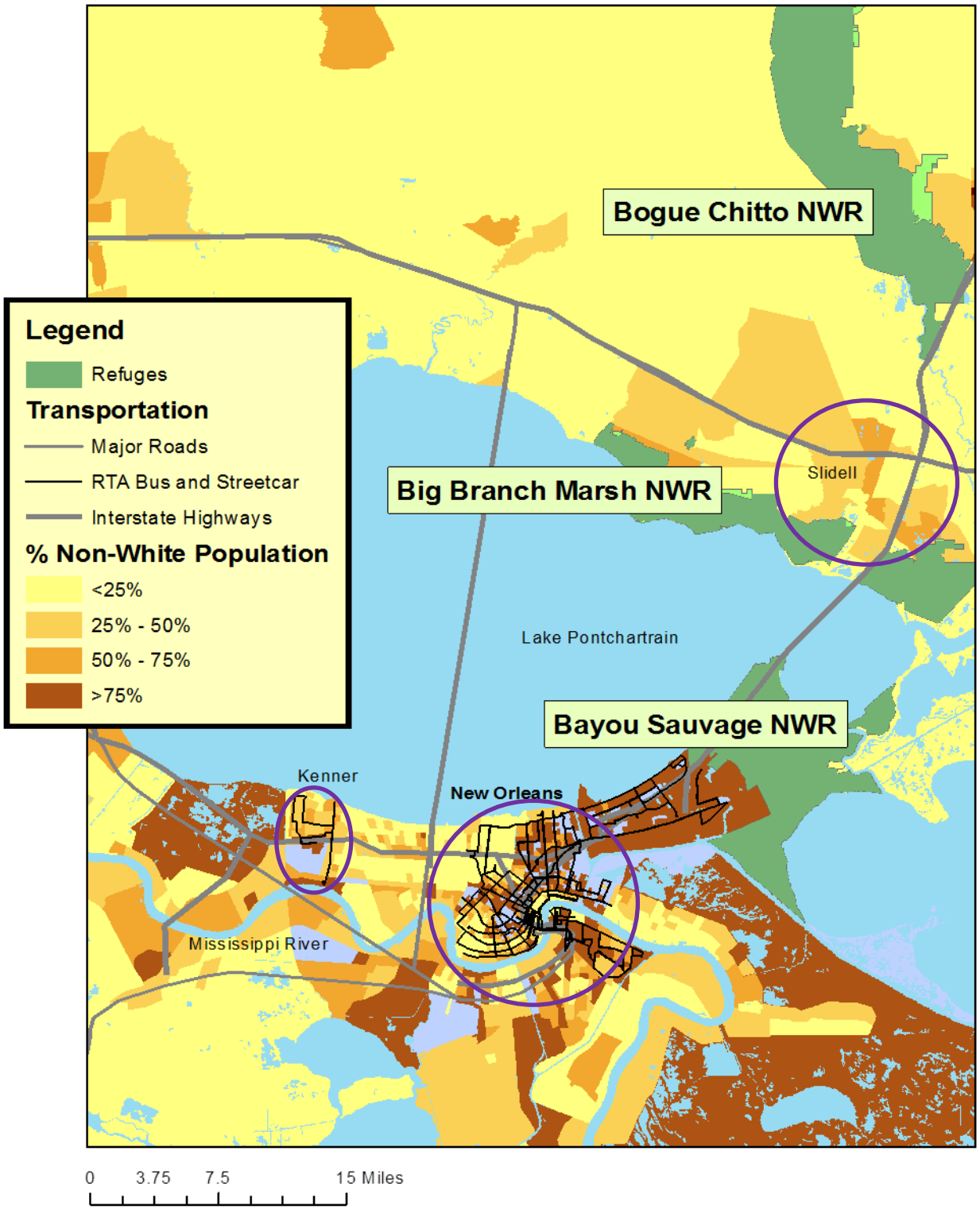
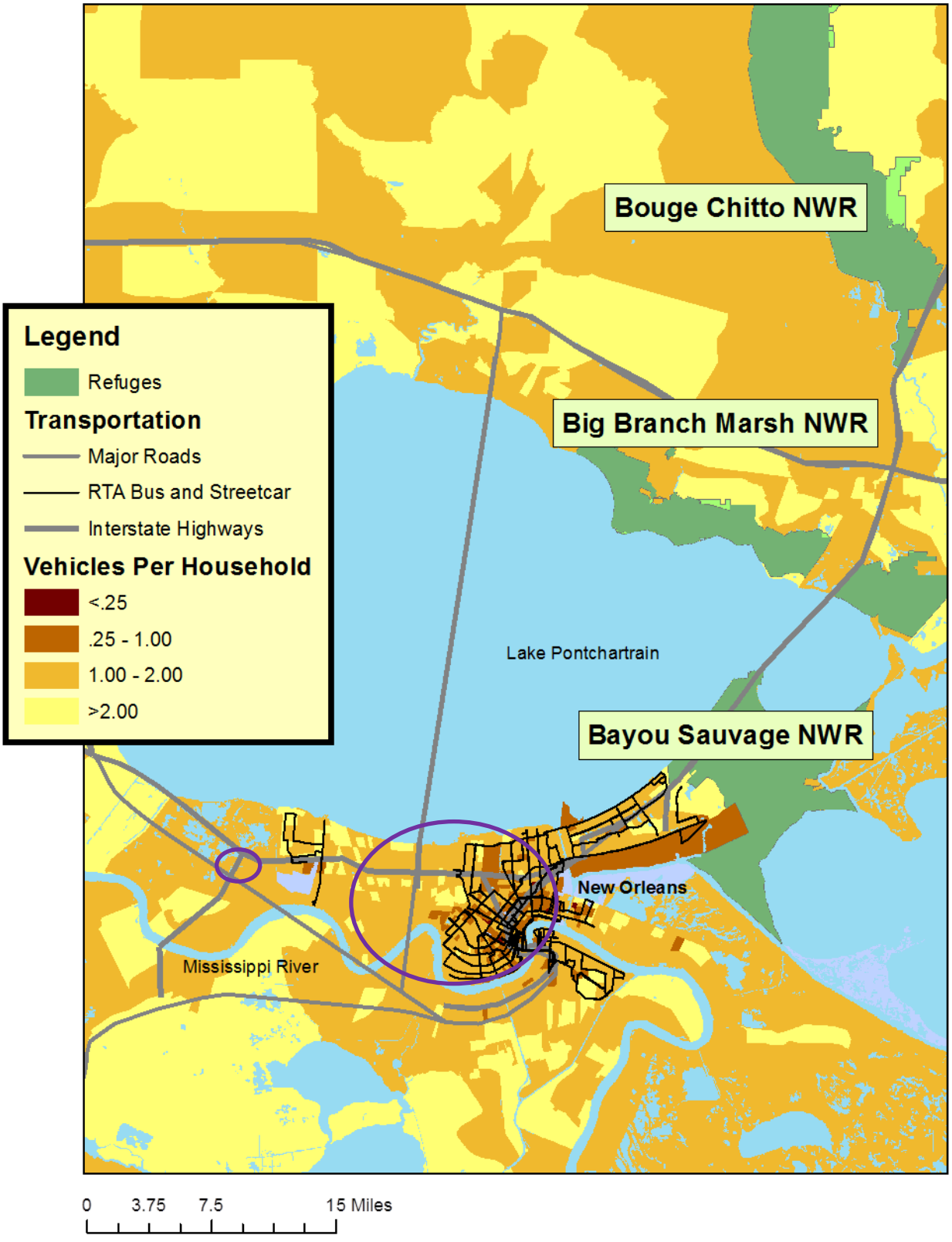


Figure 9: Average Number of Vehicles per Household in the New Orleans Metro Area



Southeast Florida

The strip of urban areas along the southeast coast of Florida is home to nearly five million, and hosts millions more tourists from across the nation and the world. Located between the Everglades and the Atlantic Ocean, the metro area has seen intense land development leaving only one undeveloped national wildlife refuge in the area. Vehicle ownership in the metro region is lower than elsewhere in Region 4, and the share of the non-white population (primarily self-identifying as Hispanic) is very high, as is clearly visible in Figure 11. However, the areas closer to the refuge tend to be wealthier and whiter than the rest of the metro area (see Figure 10), and so ATS has the potential to reach out to underserved communities in the areas surrounding Palm Beach, Fort Lauderdale and Miami. Central Miami is home to large populations of low-income, car-less, and non-white populations, but parts of Fort Lauderdale and suburbs of West Palm Beach are also circled on the map as underserved and are closer to Loxahatchee NWR.

The **Arthur R. Marshall Loxahatchee NWR** lies between and to the west of Fort Lauderdale and Palm Beach. The nearest fixed route public transit service runs about five miles east of the visitor center, which is located on the east side of the refuge close to Boca Raton. The refuge preserves a portion of the Everglades swamp ecosystem, and is bordered on the south by more swampland under different jurisdiction. Recreation on the Loxahatchee NWR includes hiking, bird watching, hunting, and fishing.

The refuge is easier for underserved populations to access than others in Region 4 due to its location just west of the urban area. Car ownership in the metro area tends to be high overall, with pockets of low car ownership in Fort Lauderdale and Miami (see Figure 12). These are the areas of the region farthest from the refuge. The Tri-Rail commuter rail system runs north-south through Southeast Florida, and could be used to help underserved populations in Miami and Fort Lauderdale reach the northern portion of the metro area. Due to the lack of transit to the refuge gates, some form of shuttle bus would be needed to make the final ten mile distance between Tri-Rail stations and the refuge. The refuge already works with organized groups, such as schools seeking field trip opportunities. The refuge reports some minority visitors, but it reports few or no low-income visitors.

The refuge has an existing cycling connection stretching out to points south, such as Fort Lauderdale, via bike paths and designated cycling roads. However, the distance from the refuge to the high densities of underserved populations in Fort Lauderdale is about ten miles, a distance that will likely dissuade many cyclists. The refuge reports that the bike trail leading to the refuge is in poor shape, and staff are working with local government to rehabilitate it. The refuge also reports that improving non-motorized access to the refuge in general, including repairing the bike path and possibly constructing others, is its highest ATS priority.

Figure 10: Median Household Income in the Miami/Fort Lauderdale area

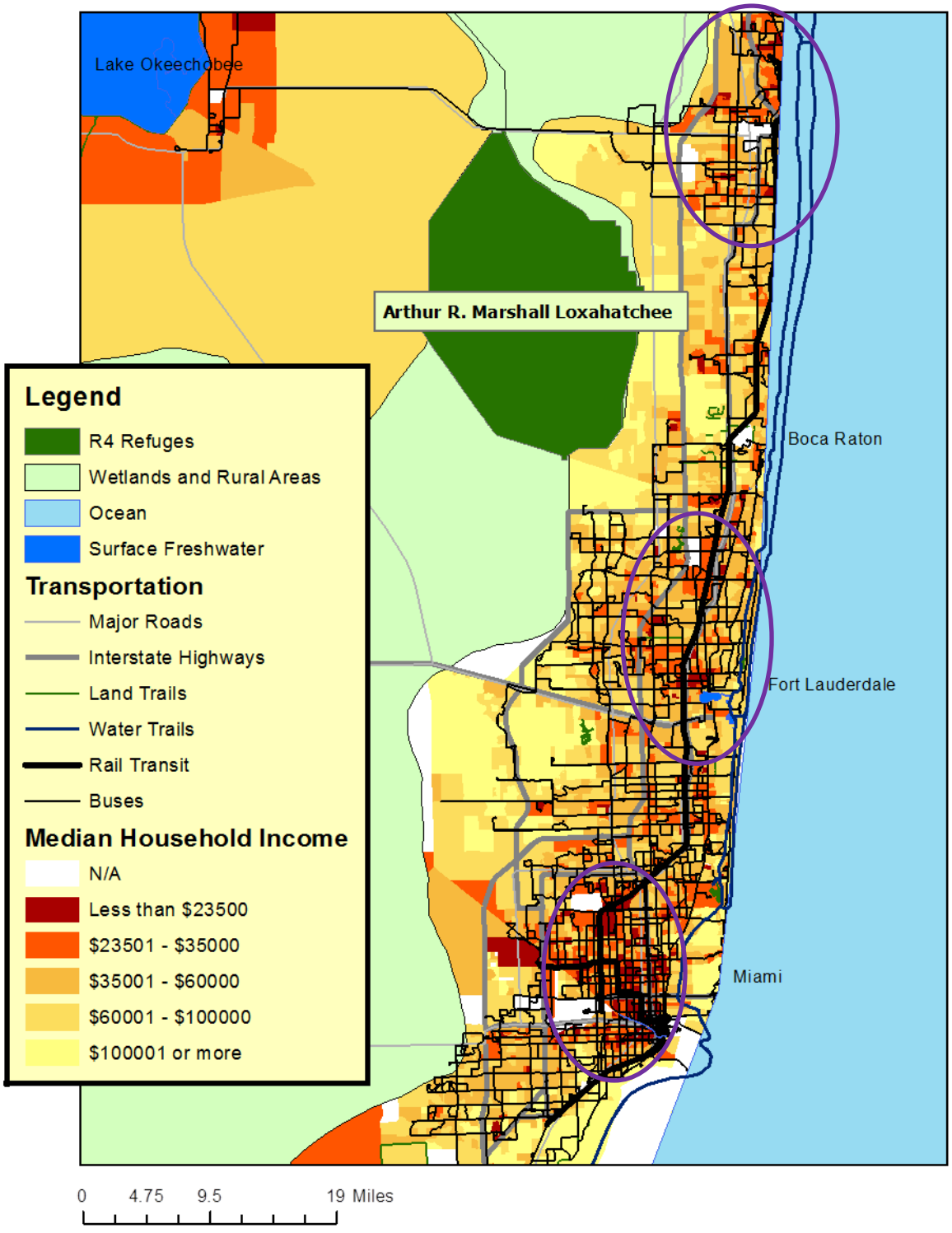


Figure 11: Non-White Population in the Miami/Fort Lauderdale Area

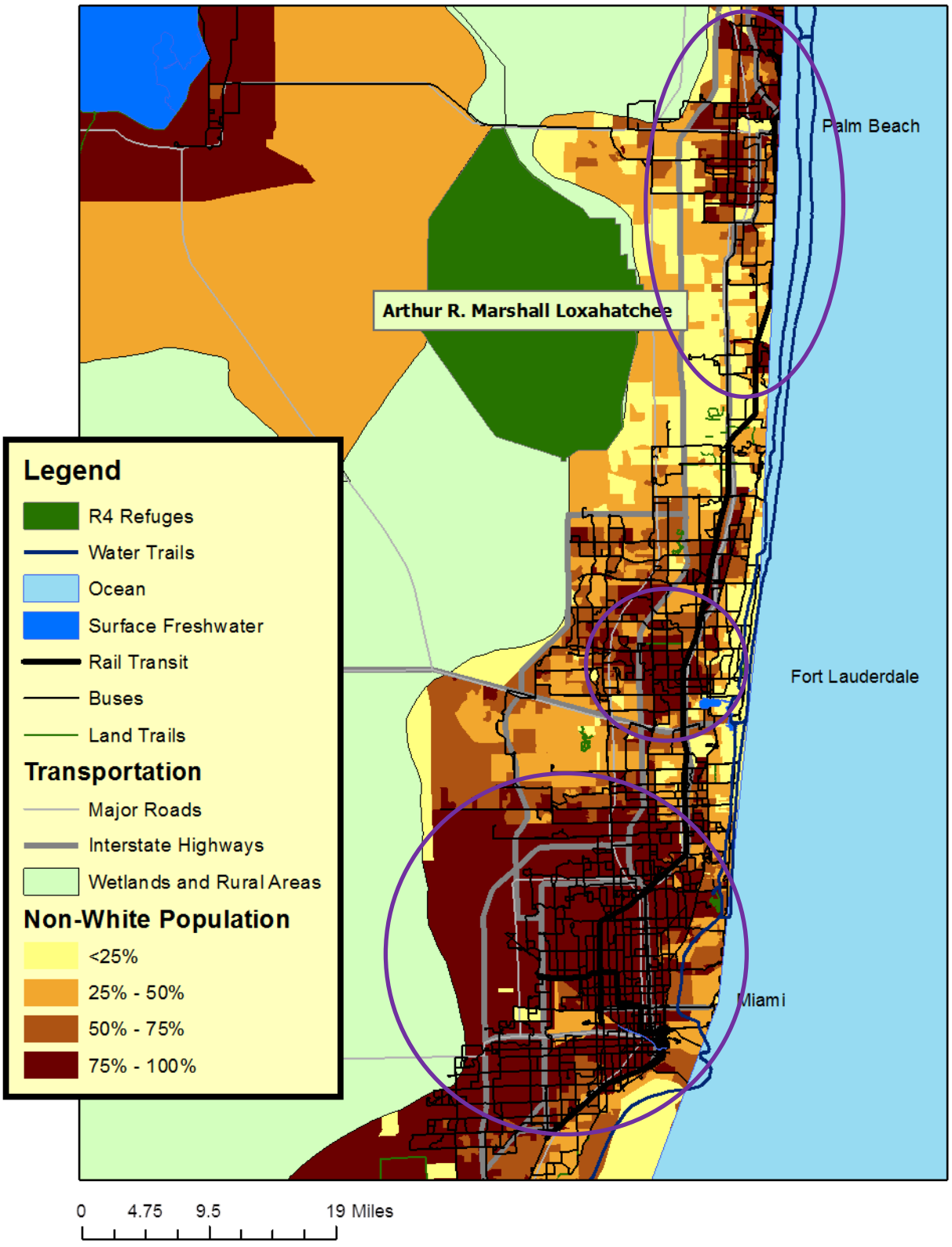
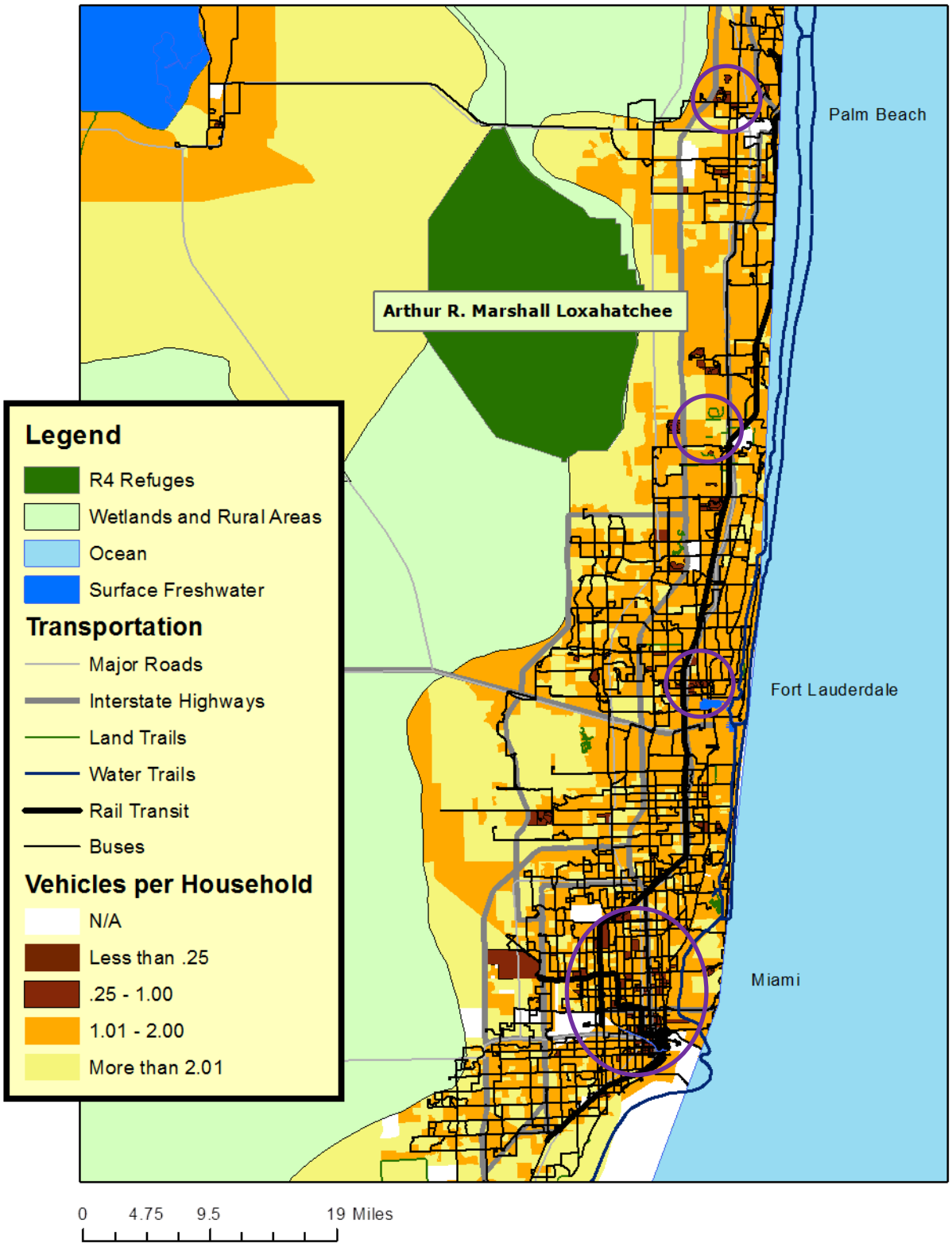


Figure 12: Vehicles per Household in the Miami/Fort Lauderdale Metro Area



Savannah / Hilton Head

The greater Savannah, Georgia, metro area is home to just over 550,000 residents and hosts hundreds of thousands of tourists who come to see the historic cities and relax in resort communities. The area includes parts of northeast Georgia and southeast South Carolina, including Savannah and its suburbs and the resort community of Hilton Head Island. There are several FWS National Wildlife Refuges in the area managed under the Savannah Coastal Refuges Complex. The refuges protect forests, marshes, and islands on and near the coast, along with the plants and wildlife that inhabit them.

As seen in Figure 13, the region has a relatively high median income, especially when the resort communities are considered. However, there are still major concentrations of underserved populations living near central Savannah, and some smaller areas of low income, high minority populations, and/or low car ownership throughout the region (see also Figure 14 and Figure 15). Reaching out to these populations requires closing a distance gap, as the refuges in the metro area are not walkable from any major communities. Bus, van, or ferry transit working with existing non-profit groups, schools, and senior centers would be the easiest way to move large groups to the refuges. Several of the refuges are on islands, and all are located on some navigable body of water. This presents an obvious transportation challenge, but also offers the opportunity to engage communities with their local waters. The FWS in the region does not provide or contract water transportation, but there are numerous other providers in the area.

Pinckney Island NWR is a coastal refuge just off Highway 278 between Hilton Head Island and the mainland. Visitors come to walk and bicycle the trails and gravel roads on the island and see wading birds, raptors, deer, and alligators. Fishing (especially by kayak) is also a popular activity in marshes and saltwater adjacent to the refuge. The majority of refuge visitors are tourists or seasonal residents of Hilton Head and Bluffton, with peak visitation occurring in the winter and spring. Pinckney Island is unstaffed and has no restrooms or drinking water available to the public, limiting some recreation activities on the island. For more information about the refuge, see the case study written about Pinckney Island NWR.

Alternative transportation to the refuge is limited by the highway bridge, which does not feature any pedestrian or cyclist accommodations. However, some organized ATS services have proven popular at the refuge and could be used for outreach to underserved communities. Commercial providers run cycling tours that drive visitors onto the island in vehicles that carry bicycles on trailers. While these tours tend to attract Hilton Head tourists, similar itineraries, perhaps with nature walks or kayaking as activities, could be targeted to underserved Savannah neighborhoods. Such a program would need to be limited in scope, as the refuge reports limited parking for buses and large vehicles as a transportation concern.

Savannah NWR is the closest refuge to the city of Savannah, located six miles north of downtown and proximate to neighborhoods with low rates of vehicle ownership circled in Figure 15. The refuge is inland from the ocean and protects forests and freshwater marshes using water impoundments. Popular visitor activities include bird watching, hiking and cycling, and auto touring on the wildlife drive. The levees that create the impoundments serve as a pedestrian trail network that allows visitors to move around the otherwise marshy refuge land without needing paddlecraft or a swamp boat.

Although it is the closest refuge to Savannah, the distance of six miles may dissuade many casual cyclists and pose a wayfinding challenge. The refuge may consider using ATS to reach underserved communities by using transit, kayaks, or charter boats to directly connect to Savannah neighborhoods. Such a program

would offer the opportunity to get onto the water and learn about the marshes, rivers, and local wildlife. Other access opportunities include carpools, vans, or buses for special events or guided tours, which could be coordinated with local schools and community groups.

Harris Neck NWR preserves coastal marshes and upland forests. The land was used far more intensively than other area refuges, serving as farmland, a military airfield, and a small airport. Remnants of the refuge's human history can still be found mixed in with the recovering ecosystem. As seen in the maps below, Harris Neck is more than thirty miles from Savannah, making carpools, vans, or buses the most feasible ATS mode to access the refuge.

Visits by underserved groups to Harris Neck could feature programming focused around both the natural and historic aspects of the site, including wetland ecology, the use of the airport as a training field during WWII, local species of wildlife, or the Gullah community that once lived on the site. Although the farthest refuge from Savannah included in this analysis, Harris Neck provides a unique opportunity to mix natural with historical recreation.

The following two refuges are islands with very limited public access, making them more difficult candidates for ATS access by underserved communities:

Tybee NWR is a small island just off the Georgia coast that protects migratory birds. It is closed to public landings, although visitors may fish in the waters nearby. Any ATS outreach to underserved communities would have to be designed with this in mind, limiting activities to scientific education or fishing sessions.

Wassaw NWR is another barrier island off the Georgia coast. Unlike Tybee it is open to the public, but is still undeveloped. Popular visitor activities include hiking, bird watching, and using the beaches. Access is only by private or chartered boats, making this refuge out of reach for most members of underserved communities. ATS access to the island would necessarily have to be by ferry or other watercraft. Wassaw presents an opportunity to provide a more remote experience than at some of the other refuges in the area.

Figure 13: Median Household Income in the Savannah Metro Area

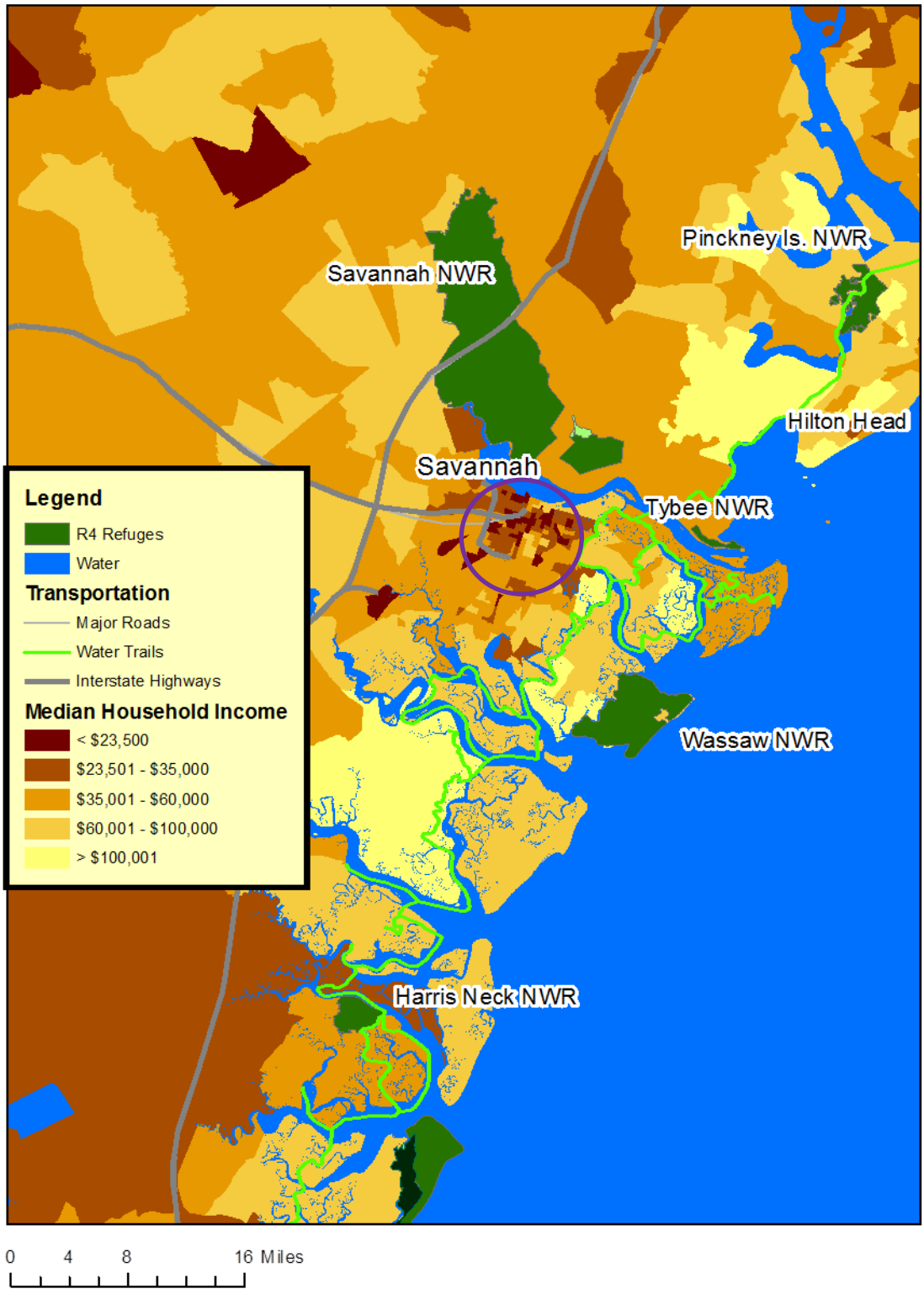


Figure 14: Non-White Population in the Savannah Metro Area

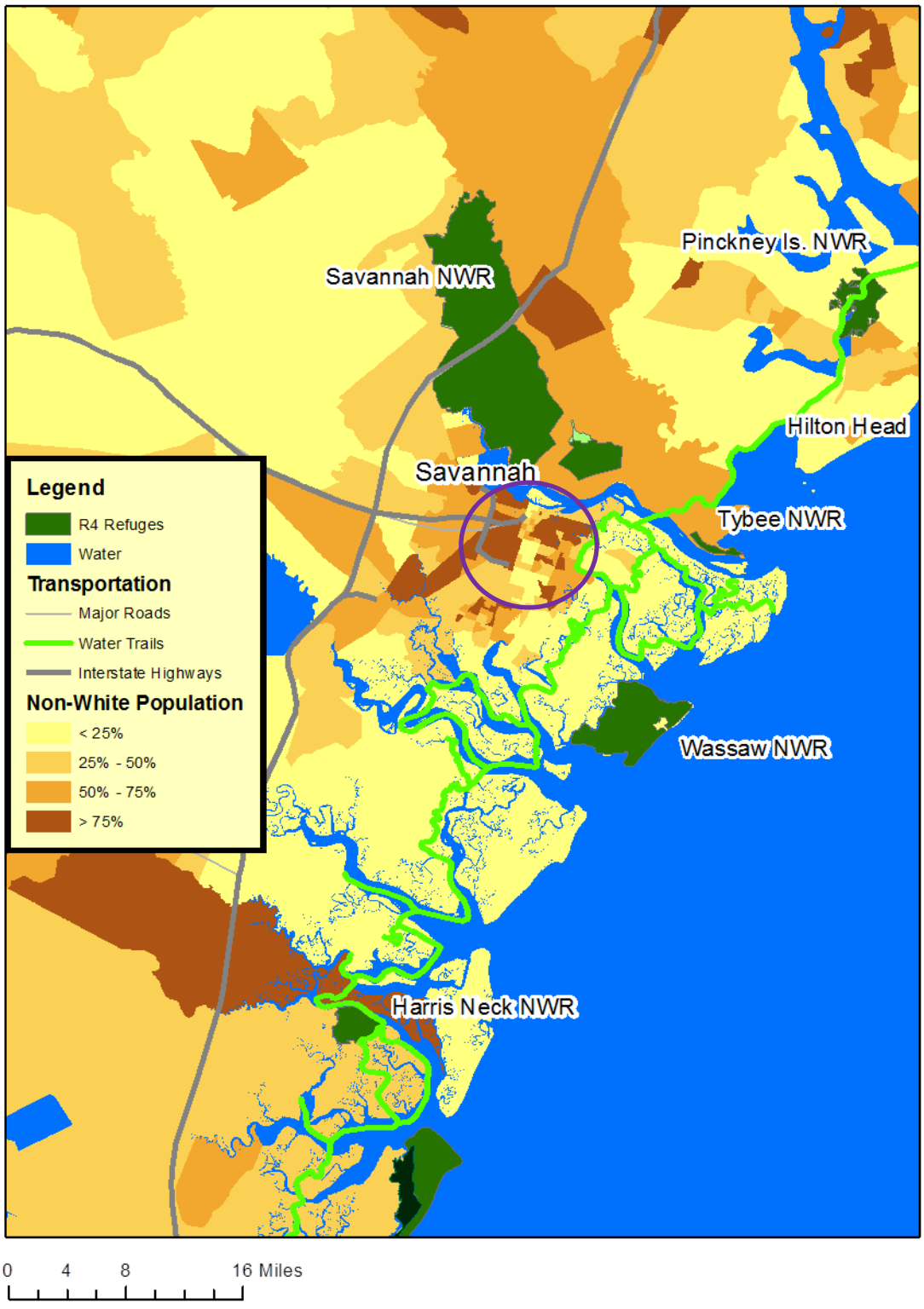
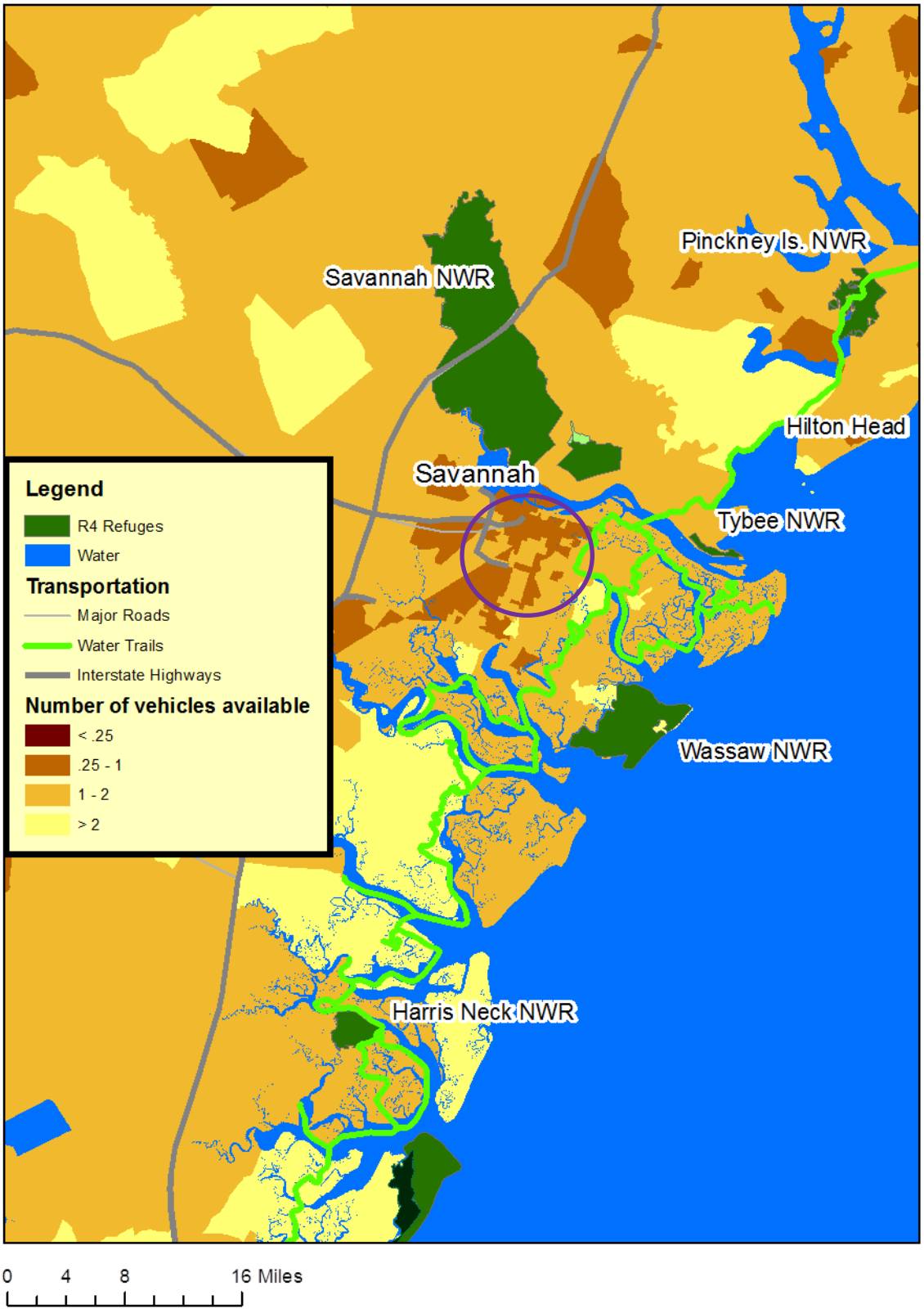


Figure 15: Vehicles per Household in the Savannah Metro Area



Funding Sources for ATS

The primary funding source for transportation projects on Region 4 stations is the Federal Lands Transportation Program (FLTP). Established in 2012 through Moving Ahead for Progress in the Twenty-First Century (MAP-21) surface transportation bill, the FLTP includes ATS as eligible projects. Specifically, FLTP funds can be used for transit capital costs, transit operations and maintenance expenses, trail construction, and bicycle and pedestrian enhancements. However, ATS projects will have to draw from a limited regional allocation of FLTP funds, the vast majority of which will likely be allocated towards priority road project needs based on the FWS transportation asset portfolio and past spending from similar programs. FLTP funds will most likely advance ATS through enhancements to larger road construction projects, such as the inclusion of bicycle and pedestrian features. FLTP funds may also fund transit and bicycle/pedestrian projects that stand out as regional priorities or that perform well under a multimodal project selection process (see the next section on Project Selection).

A second funding source established through MAP-21 is the Federal Lands Access Program (FLAP), which funds projects on routes owned or maintained by state or local governments that provide access to Federal lands. Like FLTP, FLAP also includes ATS projects and features as eligible expenses. The program is administered jointly by the FLH, state DOTs, and local governments, and exact application requirements and selection criteria vary by state. Some states require ATS projects to fill out separate applications from highway-based capital projects. FLAP may be well-suited for ATS projects in that many of the ATS needs and opportunities identified on Region 4 stations involve access improvements on local or state roads leading to the station. Types of FLAP-eligible projects commonly cited as needs among Region 4 stations (through the ATS questionnaire and phone calls) were separated pedestrian or bicycle paths on major highways accessing the station, seasonal/special event transit service to connect a refuge with a nearby urban area, and pedestrian crossings over or under busy state highways. For more information about the FLAP application process, visit the EFLHD website: http://www.efl.fhwa.dot.gov/programs/federal-lands-access.aspx.

In addition to the FLTP and FLAP funding, there are a few additional funding sources that may help fulfill unmet ATS needs. State transportation, recreation, natural resource, and environmental agencies often administer discretionary or grant funds. One significant source of these funds are part of the Transportation Alternatives Program, authorized under MAP-21; because these funds are distributed via State DOTs, the application information varies by state. States also have funding programs for transportation and recreational trails and enhancements to make transportation systems more conducive to using bicycle, pedestrian, and transit modes. In the case of state-administered funding sources, partnerships with local governments and neighboring landowners is critical for leveraging funds and developing competitive applications. The Rivers, Trails & Conservation Assistance Program (RTCA), led by the National Park Service, offers technical assistance for establishing partnerships and project ideas. Puerto Rico and the U.S. Virgin Islands receive funds from FHWA in the form of the Territorial and Puerto Rico Highway Program, which can be used to fund access roads in the two territories. Although primarily focused on roads, the program can also fund ferry systems.

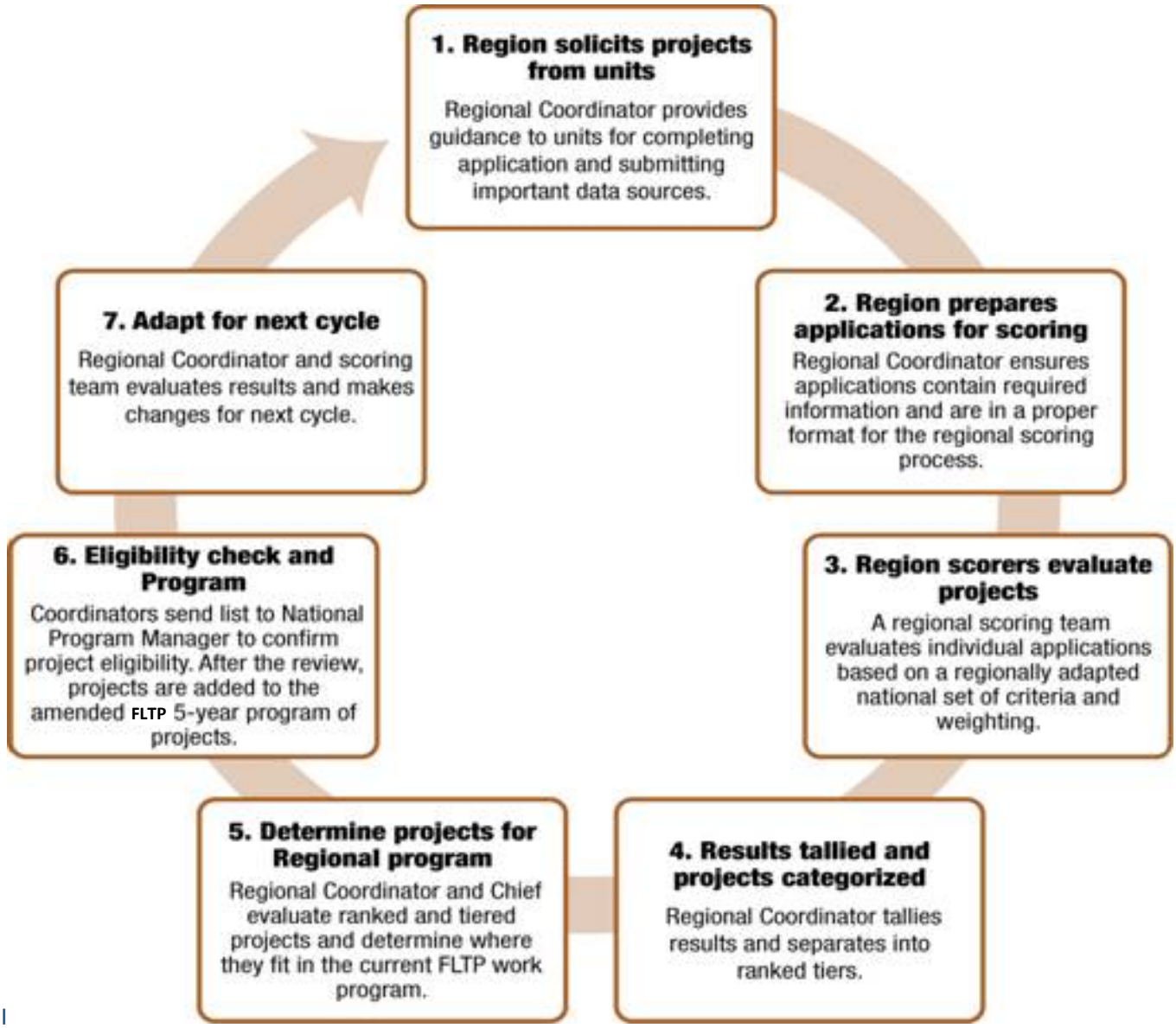
Table 3: State-based funding sources for ATS projects

State	ATS Funding Sources	Transportation Alternatives Link
Alabama		Transportation Enhancement Profile http://www.ta-clearinghouse.info/state_profile?state_id=1
Arkansas		Transportation Enhancement Profile http://www.ta-clearinghouse.info/state_profile?state_id=5 Recreation Reimbursement http://www.arkansashighways.com/recreational_trails.aspx
Florida	Florida Forever http://www.dep.state.fl.us/lands/fl_forever.htm Florida Office of Greenways and Trails: http://www.dep.state.fl.us/mainpage/programs/gwt.htm	Florida Recreational Trails Program http://www.dep.state.fl.us/gwt/grants/
Georgia		Transportation Enhancement Program http://www.ta-clearinghouse.info/state_profile?state_id=12 Georgia Trails and Greenways Grants http://www.gastateparks.org/grants/rtp?mode=p
Kentucky	Land and Water Conservation Fund (LWCF): http://dlg.ky.gov/grants/federal/lwcf.htm	Transportation Enhancement Program http://www.ta-clearinghouse.info/state_profile?state_id=20 Recreational Trails Program (RTP): http://dlg.ky.gov/grants/federal/rtp.htm
Louisiana		Transportation Enhancement Program http://www.ta-clearinghouse.info/state_profile?state_id=21 Trails Funding http://crt.louisiana.gov/parks/RTP-overview.aspx
Mississippi		Transportation Enhancement Program http://www.ta-clearinghouse.info/state_profile?state_id=27 Transportations Alternatives Program (PDF link) http://sp.mdot.ms.gov/LPA/TAP/TAP%20Information%20Document.pdf
North Carolina	NC Trail Grants http://www.ncparks.gov/About/grants/trails_grant.php Carolina Thread Trail Grants http://www.carolinathreadtrail.org/resources/funding-sources/	Transportation Enhancement Program http://www.ta-clearinghouse.info/state_profile?state_id=36
South Carolina	Park and Recreation Development Fund http://www.scprt.com/our-partners/grants/pard.aspx	Transportation Enhancement Program http://www.ta-clearinghouse.info/state_profile?state_id=44 Transportation Alternatives Program Website http://www.scdot.org/getting/community_bikepedfacilitysafety.aspx
Tennessee		Transportation Enhancement Program http://www.ta-clearinghouse.info/state_profile?state_id=46 Tennessee DOT Enhancement Grants http://www.tdot.state.tn.us/local/grants.htm
Puerto Rico and U.S. Virgin Islands	Territorial and Puerto Rico Highway Program http://www.fhwa.dot.gov/map21/tprhwy.cfm	Ineligible to receive Transportation Enhancement funding

Project Selection

As part of its National Long-Range Transportation Plan, the FWS is adopting a standard set of project selection criteria for FLTP funds to be adapted for use in each region. The standardized criteria and process are meant to link project selection to program goals, use data to drive decision-making, and contribute to a stable and predictable program of projects across the Service. The project selection process includes seven steps to be implemented at the regional level, as shown in Figure 16. Within these steps, there is room for the region to exercise flexibility, such as the format for submitting project ideas, the types of data submitted, the composition and methods of the team to score projects, and the management of the project selection process.

Figure 16: Regional Project Selection Process



There are six project criteria which relate to the goals of the FWS Transportation Program and will be used to select projects. Within these criteria there are multiple linkages to ATS projects, as noted below:

1. **Improves transportation safety:** The Service will address safety to ensure all road users arrive safely at destinations, regardless of their modes of transportation and trip purposes.

    a. **ATS link:** The criterion calls out multimodal transportation safety, ensuring that projects offer safety for all users, including vulnerable users of pedestrian or bicycle modes.

2. **Improves the "state of good repair" of transportation assets:** The Service will maintain and improve upon the condition of transportation assets (i.e. roads, bridges, trails, runways, etc.), including such activities as preventative maintenance.

    a. **ATS link:** The criterion focuses on repairing existing trails, transit, and other ATS infrastructure before building new capacity.

3. **Enhances transportation choices to, from, and within FWS stations:** The Service is committed to increasing the efficacy, quality, and availability of other modes of travel to provide more transportation choices for visitors and to support Service goals.

    a. **ATS link:** This criterion has the most direct connection to ATS by calling for more mode choice in station access, noting that alternative modes should be available to many users, effective, and high in quality.

4. **Enhances environmental conditions in the field and/or helps to meet programmatic goals:** The FWS Transportation Program supports the Service's mission through its transportation investments and decisions, as well as other program priorities and needs.

    a. **ATS link:** ATS can enhance environmental conditions by removing vehicles and their potentially negative environmental impacts from roadways. This criterion also focuses on programmatic goals, such as visitor experience and environmental education, which can be easily incorporated into transit and non-motorized projects via interpretive features.

5. **Meets a priority: (a) documented in a Comprehensive Conservation Plan, (b) other transportation plan/analysis by FWS or partners; or (c) is within a Region's high-use or urban station**: The Service will work to support the spirit of the CCP process, as well as partner planning processes, that reflect transportation needs and priorities at Stations.

    a. **ATS link**: This criterion helps stations plan for its highest priority transportation needs; stations are encouraged to include ATS projects in their plans due to the long-term benefits they can provide in multiple goal areas. Also, high-use stations and those in urban areas may be especially well-suited to ATS due to connections with existing transportation networks and volumes of visitors.

6. **Supports transportation partnerships and leveraging of transportation funds / programs to benefit FWS:** The Service will maximize coordination opportunities and partner both internally and externally to address Service transportation priorities and leverage funds to meet transportation needs for FWS lands.

    a. **ATS link:** Partnerships and multiple funding sources are especially critical for ATS projects, which often involve multiple types of stakeholders.

Each of these criteria either directly supports ATS or offers credit for the benefits that ATS provides, thus helping to boost the competitiveness of ATS projects for use of FLTP funds.

Regional Alternative Transportation Evaluation Case Studies

The results of the RATE survey provided a broad look at alternative transportation in the region, as well as qualitative insights that refuge managers provided in their text responses. In addition, the RATE team spoke with staff at five refuges to get an in-depth understanding of alternative transportation at a small sample of refuges in the region. The five refuges were selected based on the following criteria:

- Reported that they were interested in further involvement with the RATE
- Have existing ATS
- Noted transportation issues that could be resolved using ATS
- Marked establishing ATS as a high priority
- Had received little transportation planning attention in recent years
- Represented a set of inland and coastal refuges near and far from urban areas

The case studies include a brief description of the refuge location, visitation, and transportation characteristics. They highlight responses from the ATS Questionnaire and describe existing multimodal transportation options to note opportunities and challenges at the refuge. The case studies include key partners, and how these partners are and can be involved in transportation at the refuge. Finally, the case studies list short- and long-term opportunities and needs, along with priorities, dependencies, partners, and potential funding sources.

Crystal River National Wildlife Refuge

Background and Opportunities

Station Background

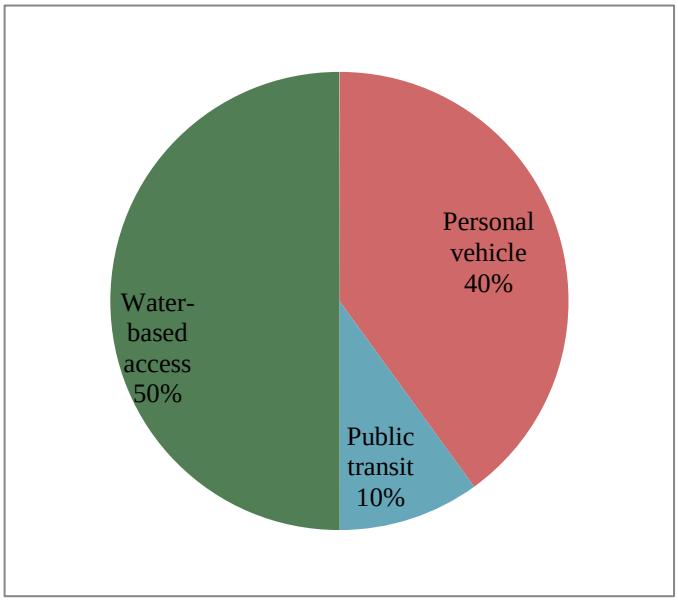
Crystal River National Wildlife Refuge is a marine refuge in western Florida's Kings Bay, located within the City of Crystal River. The refuge was authorized in 1983 to protect a large population of manatees attracted by several freshwater springs in the Bay. The refuge manages the freshwater springs located on the mainland and several small islands in Kings Bay; the refuge also participates in manatee conservation in western Florida. Nearly all visitors come to the refuge to see and swim with manatees, and manatee viewing opportunities are predominately only available from the water. Visitation follows the manatee populations around the Bay and peaks during the winter months. The refuge acquired the Three Sisters Springs and 58 acres of adjacent mainland in 2010 and is currently seeking funds to develop the site for general visitation. A developed site would give visitors the opportunity for land-based manatee observation through the development of boardwalks and observation sites.

The refuge is considering two alternatives for visitor access. Master Plan A would place parking lots and a visitor center directly on the Three Sisters Springs site, and most visitors would drive directly to the refuge. Master Plan B would place the visitor center and most parking off-site in order to lower the human presence onsite, combine resources with other proposed visitor centers, and increase visibility along US Highway 19. In Master Plan B, visitors would need to be shuttled from the visitor center to Three Sisters Springs using a tram or bus. Groups, disabled visitors, and FWS staff would make use of limited onsite parking at the Springs itself.

Highlighted RATE Questionnaire Responses

- **Special Events:** Quadrennial open houses at the Three Sisters Springs are the main events at the refuge. During open houses, bus shuttles move between 1,200 and 2,300 visitors during a half-day event from an off-site parking lot into the undeveloped Three Sisters Springs.
- **Major Transportation Challenges:**
  - Resource conflicts
  - Funding shortages
  - Lack of transit service
  - Lack of safe pedestrian access
  - Staff capacity
  - Appropriate and effective signage
  - Visitor orientation
  - Road safety

Figure 17: Visitor Access by Mode at Crystal River NWR



Existing Alternative Transportation

Transit

Citrus County Transit operates one bus route in Crystal River and provides paratransit service to the area. The Crystal River route has several stops within a mile of the Three Sisters Springs site. Transit service runs on weekdays about every two hours and fifteen minutes from 6 am until 7 pm; the low service frequency limits the feasibility of transit use for most refuge visitors, but a well-informed local resident could make use of the bus to reach the refuge. The bus connects with other Citrus County transit lines and the intercity Greyhound bus station.

The refuge partners with Citrus County Transit to shuttle visitors to the Three Sisters Springs site during open houses about four times per year. The service runs from a nearby shopping center parking lot directly to Three Sisters Springs at a frequency of five to ten minutes. Refuge staff are present to manage the visitors, and they also provide temporary toilets and water during these events. The refuge considers this a developed service that has given staff the experience they need to successfully contract or operate a permanent service similar to the Master Plan B concept.

Non-motorized Trails

Three Sisters Spring currently has a gravel access road that is used during the open house events. Visitors on foot could use the road for pedestrian access, but the refuge keeps the road closed as they do not want to allow unstaffed access to the refuge at this time. Future plans include trails throughout the site and an ADA-accessible boardwalk in manatee viewing areas. The planned trails would link to the City of Crystal River's sidewalk network via a sidewalk on Kings Bay Drive north of the refuge. Cutler Spur Boulevard, running along the east side of the site, is currently being widened to accommodate more vehicle traffic, and the widening project includes a parallel bike trail as a component.

Water

The overwhelming majority of visitors currently arrive by boat, as there is no way for visitors to view manatees from the land (with the exception of the open houses). Visitors use private motorboats, rented or private canoes and kayaks, and organized tour boats to access other refuge sites around Kings Bay. Visitors follow the manatees, and the sheer volume of boats may be stressful to the animals. The refuge is planning an outreach campaign that would place signs informing boaters of manatee etiquette at local boat launches.

Partnerships

The refuge has a close working relationship with many organizations developed during the multi-year process to acquire the Three Sisters Springs site. Much of the funding was provided by the State of Florida, with participation from the county and city governments as well as private donations. A small friends group continues to help raise funds for the refuge, and volunteers provide critical services such as wildlife monitoring.

Due to its location of Three Sisters Springs within the city limits, the refuge's relationship with the City of Crystal River is very close, and the two are coordinating on various transportation issues as the City expands local roads and the refuge prepares to open Three Sisters Springs. The refuge also works with the Southwest Florida Water Management District, which will be using a portion of the site to clean water runoff before it enters Kings Bay.

Opportunities and Needs

Short-term Opportunities

Regular Pilot Shuttle Service to Three Sisters Springs	
Project Description	Run buses to Three Sisters Springs on a monthly or weekly basis, increasing the frequency beyond four times per year.
Refuge Priority	Medium
Time Frame	Short term, as existing relationships with parking and bus providers are already in place for special event service.
Dependencies	Refuge staff expect that demand would overwhelm a small pilot service, so shuttle service must include planning for visitor management. The service would either need a high frequency or reservation policies, adding management complexity.
Potential Funding Sources	Fares or fees to cover operating and leasing costs; expansion of existing agreement with Citrus Transit.
Partners	Citrus County Transit, City of Crystal River, friends group

Interpretive Kiosks at Boat ramps	
Project Description	Install interpretive kiosks at the four boat ramps providing water access to remind boaters of manatee etiquette. This could reduce the transportation impact on manatees by encouraging proper distance and slow speeds.
Refuge Priority	High
Time Frame	Short term, a relatively simple project with little capital investment.
Dependencies	Cooperation with the City of Crystal River and Citrus County, each of whom operate two boat ramps.
Potential Funding Sources	FWS operating funds, resource protection funds, RESTORE Act
Partners	City of Crystal River, Citrus County

Long-term Opportunities

Implement Permanent Shuttle Service	
Project Description	If the design concept that minimizes the on-refuge footprint is built, a permanent shuttle service will be required to move passengers from a visitor center to the refuge itself. Transit considerations will be incorporated into the build-out of Three Sisters Spring and the visitor center.
Refuge Priority	High, if Master Plan B is built.
Time Frame	Long term, requires construction of Master Plan B.
Dependencies	Funding to build out Master Plan B, transit turnaround loops, waiting areas and shelters, contracts for operating vehicles, arrangements for maintenance.
Potential Funding Sources	FLAP, FLTP, or private fundraising for capital costs, user fees or FWS operating funds to cover regular shuttle service costs.
Partners	Citrus County Transit

Implement Permanent Shuttle Service	
Peer costs	$100,000 to $800,000 purchase price per new vehicle, $50-100 per hour operating expenses

Construct a Multi-Use Path Between the City of Crystal River and the Refuge	
Project Description	Construct a trail to connect the refuge to the center of Crystal River, a distance of less than a mile. This would make non-motorized travel easier given road expansion anticipated in the area.
Refuge Priority	Low, proposed by the City of Crystal River
Time Frame	Long-term
Dependencies	Finalized road expansions and rehabilitation in the area, a developed Three Sisters Springs site
Potential Funding Sources	Federal Lands Access Program, City of Crystal River, private donors, Florida Forever, Recreational Trails Program
Partners	City of Crystal River
Peer costs	$200K-$500K per mile for an asphalt or concrete path (Rails to Trails Conservancy)

Eufaula National Wildlife Refuge

Background and Opportunities

Station Background

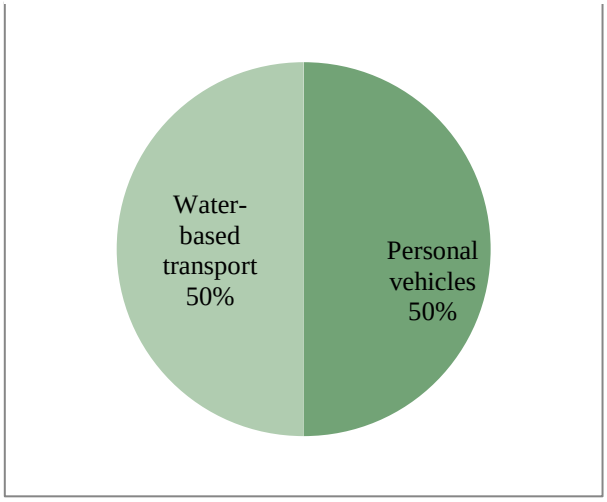
Eufaula National Wildlife Refuge is located on the Chattahootchee River in southeast Alabama and southwest Georgia. Located approximately 10 miles north of the city of Eufaula, the refuge is about 2.5 hours south of Atlanta and 3 hours north of Panama City Beach, Florida. The refuge is located along the state and county highways that many people use to travel between Atlanta and Panama City, and thus attracts many visitors who make a brief stopover on their way to other destinations. The refuge is situated at the north shore of Lake Eufaula, also known as the Walter George Reservoir. The lake is a major destination for competitive and recreational bass fishing, with an average of two to three fishing tournaments per weekend. Lakepoint Resort State Park is adjacent to the refuge on the lakeshore, and the park has numerous recreational amenities.

The refuge contains wetland and upland habitat for waterfowl and other fauna, including several waterfowl impoundments. Visitation skews heavily towards boating and fishing (with 400,000 visitors per year), but refuge staff note the significance of terrestrial visitors that come from out of town to view wildlife, including alligators. These visitors may auto tour the seven-mile, gravel Wildlife Drive in the main refuge unit, walk along a designated pedestrian trail near the refuge headquarters, or walk or bicycle on seasonally-closed roads. Another subset of visitors participates in seasonal waterfowl hunts and deer archery. Terrestrial visitation is concentrated in the early morning or late afternoon hours, with many visitors stopping at the refuge office/visitor contact station, which is only open on weekdays. Staff note that orientation and wayfinding to and within the refuge could be updated to improve the visitor experience.

RATE Questionnaire Responses

- Distance from the nearest transit station: More than 3 miles
- Distance from the nearest regional trail: More than 3 miles
- Transportation challenges
    - Condition of trails and roads
    - Roadside erosion and invasive species
    - Visitor orientation and signage to and within refuge
    - Staff capacity and funding shortages

Figure 18: Visitor Access by Mode at Eufaula NWR



Existing Alternative Transportation

Non-motorized Trails

The refuge has one designated walking trail and is planning a second interpretive trail one-quarter mile in length in its main unit. This new trail would be the refuge's first ADA accessible trail, fulfilling one of the refuge's priorities. Bicycles and pedestrians are permitted on gravel roads, including those closed to

private vehicles. The refuge website encourages hunters, fishermen, and wildlife observers to use bicycles to access remote parts of the refuge. The adjacent Lakepoint State Park has a more extensive and formalized trail system than the refuge, but there are no pedestrian or bicycle connections between the two.

The nearest trail to the refuge is the Yoholo Micco Trail, a paved rail-trail that runs 2.5 miles from downtown Eufaula to the shores of Lake Eufaula, terminating at Old Creek Town, the former site of a Creek Indian village. The trail covers approximately one-quarter of the distance between the City of Eufaula and the refuge. There are no immediate plans to expand the trail.

Water-based Transportation

FWS owns and maintains two public boat ramps, and there are an additional three boat ramps on the Alabama side of the river and one public boat ramp on the Georgia side of the river. The majority of water-based use is currently on motorized boats for fishing purposes on the Reservoir, both for recreational and competitive purposes. However, there is also an emerging contingent of non-motorized boat users, and there is an interest in pursuing Alabama Boating Trail designation for a water trail on the refuge. Non-motorized boating is the only boating allowed in waterfowl impoundments.

Transit

A small number of visitors access the refuge via tour buses through private groups; tours generally follow the Wildlife Drive. This visitation has grown recently due to an environmental education specialist who helps organize these tours. The specialist is serving on a 13 month term position to the refuge, and the FWS does not anticipate sustaining this coordination beyond the length of the term position. Some local citizen groups have expressed interest in refuge tours, such as those served by a transit vehicle, but the refuge does not have capacity to deliver those tours. Lakepoint State Park contains a resort and conference center, and some of the convention attendees may take buses into the refuge, but visitation is erratic.

Partnerships

The City of Eufaula and its residents strongly support the refuge and promote it among the local visitors, such as by maintaining refuge brochures at tourist sites. The refuge also has a positive relationship with Lakepoint State Park, located adjacent to the refuge on the Alabama side. The refuge and state park share environmental education resources and partner on events and programs, but there are currently no resources to expand the relationship.

Opportunities and Needs

Wayfinding and Orientation Improvements	
Project Description	Update brochures to increase awareness of multimodal access and recreation opportunities; add appropriate signage to help with visitor orientation to the refuge, within the refuge, between units, and connecting with other local destinations.
Refuge Priority	Highest ATS priority
Time Frame	Short-term
Dependencies	Staff capacity and resources to develop brochures and signage
Potential Funding Sources	Friends group; FWS interpretation and technical assistance pilots; staff rotations
Partners	Friends group; Lakepoint State Park; fishing tournament organizers

Accessible Pedestrian Trail	
Project Description	Construct an ADA-accessible pedestrian trail near the refuge office to address the refuge's ongoing challenge of offering access to a variety of visitors.
Refuge Priority	Medium ATS priority
Time Frame	Medium-term for trail design and construction
Dependencies	Funding
Potential Funding Sources	FLTP; Friends group; Transportation Alternatives
Partners	Friends group
Peer costs	Between $100,000 per mile (crushed shell/stone)[3] and $2 million per mile (boardwalk)

Water Trail for Canoes and Kayaks	
Project Description	In cooperation with local partners, develop a designated water trail for non-motorized boats. The trail should increase accessibility for water-based transportation and include interpretive elements.
Refuge Priority	Low ATS priority
Time Frame	Medium or long-term
Dependencies	Refuge staff capacity; partnerships; Alabama state trail designation
Potential Funding Sources	FLAP, local tourism or environmental groups
Partners	FLAP, local tourism or environmental groups

[3] The cost estimates in the "peer cost" sections are compiled from Rails to Trails Conservancy (http://www.railstotrails.org/ourwork/trailbuilding/toolbox/informationsummaries/trail_surfaces.html) and Florida DOT's Greenways and Trails Planning Resources.

Walking and Transit Tours	
Project Description	Use transit vehicles or offer guided pedestrian tours led by Friends Group volunteers. Tours can operate on gravel roads closed to private vehicles. (There is some interest also expressed in equestrian tours).
Refuge Priority	Low ATS priority
Time Frame	Medium or long-term
Dependencies	Refuge staff capacity; vehicle availability
Potential Funding Sources	Concession fees; State park; Friends Group
Partners	State park; Friends Group; Eufaula tourism or chamber of commerce

Hobe Sound National Wildlife Refuge

Background and Opportunities

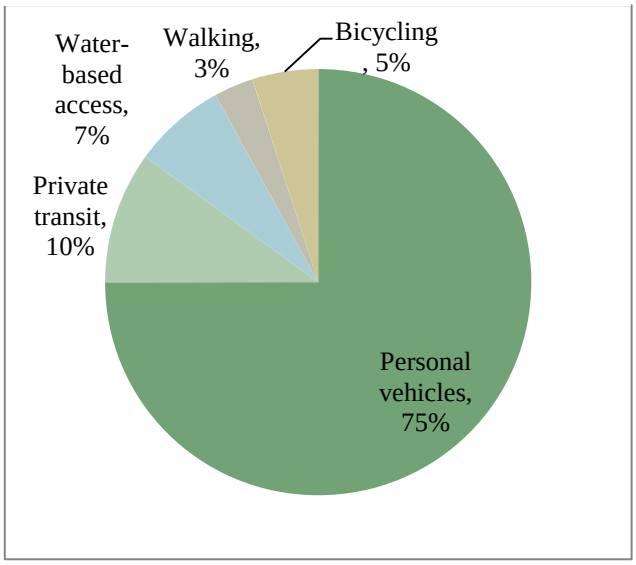
Station Background

Hobe Sound National Wildlife Refuge is located on the Indian River Lagoon on Florida's southeast coast, within the Palm Beach metropolitan area. The refuge consists of two tracts: the Jupiter Island Tract containing 3.5 miles of natural beach and turtle nesting habitat (fee area) and the 300-acre Mainland Tract with a Nature Center and limited trail infrastructure (no fee required). Primary visitor activities include fishing, wildlife observation, and beach recreation. The Hobe Sound Nature Center is run by a private, non-profit organization on the Mainland Tract of the refuge. The Mainland Tract receives 60,000 visitors per year, most of it concentrated in a five-acre tract around the Nature Center. The Jupiter Island Tract receives an equal or greater number of annual visitors in its fee access area.

RATE Questionnaire Responses

- Distance from the nearest transit station: More than 3 miles
- Distance from the nearest regional trail: Less than ½ mile (Bicycle path along Federal Highway)
- Transportation challenges
    - Lack of safe pedestrian and bicycle access
    - Congestion on roads leading to station
    - Roadside invasive plant species
    - Staff capacity and funding shortages
- Quote from the questionnaire: "*Increasing pedestrian and bicycle access to and from the adjacent Dickinson State Park would … increase safety and provide a wider variety of experiences to visitors to both sites."*

Figure 19: Visitor Access by Mode at Hobe Sound NWR



Existing Alternative Transportation

Non-Motorized

The western boundary of the Mainland Tract is Federal Highway, a four-lane divided highway with a 55 mile-per-hour speed limit and no real pedestrian facilities. The highway has a bicycle path on its shoulder, separated only by a painted line. High speeds on the roadway have caused bicycle and pedestrian fatalities, such that the road is not considered safe for non-motorized uses. On the opposite (west) side of Federal Highway is the Jonathan Dickinson State Park, a 53,000 acre park with numerous recreational amenities that serves as a major regional destination for outdoor recreation. The entrance to Dickinson State Park is approximately two miles south of the Nature Center, although many of the Park's trails and other amenities are within ½ mile of the refuge (if a direct pedestrian connection were established). There is currently no means of pedestrian or bicycle access to cross Federal Highway in the vicinity of the

refuge and State Park. An asphalt crossing does exist north of the refuge, but it is poorly signed and is not linked to any bike paths. Some bicyclists illegally use a railroad ROW bridge to cross the highway.

The Jupiter Island Tract has limited trail infrastructure, but the beach is open for walking. The access road to the refuge is low-traffic and low-speed with wide sidewalks, which accommodates bicycle and pedestrian users.

Water-based Transportation

The northern parts of the Jupiter Island Tract are only accessible by boat or walking the 3.5 miles from the southern entrance (and parking lot). Many visitors access northern parts of the Jupiter Tract via boat from the Indian River Lagoon and then walk to the beach. The refuge does not have any dock facilities but the shallow, calm waters of the Lagoon allows for easy access.

Transit

Martin County Transit provides free bus service in Martin County, with the nearest transit stop located 10 - 12 miles north at Salerno Road (Treasure Coast Route and Indiantown Route). Palm Tran also offers transit services in Palm Beach County, with the nearest stop located 12 miles south of the refuge at Indiantown Road in Jupiter. Many schools and other groups currently use private transit (school buses and vans) to attend programs at the Nature Center. The Nature Center staff organizes these activities.

Partnerships

The refuge has a good relationship with Dickinson State Park, including close collaboration on law enforcement and natural resources issues. Staff at the refuge and the Park cross-promote each other's amenities and display each other's brochures. Refuge staff see the Park and the refuge as complimentary experiences. The refuge also has a close relationship with Martin County and communicates regularly with St. Lucie County staff on inlet issues related to the Jupiter Island Tract.

Opportunities and Needs

Short-term Opportunities

Transit Access to Nature Center	
Project Description	Refuge-sponsored buses bring residents from nearby communities to the Nature Center on weekends or for special events.
Refuge Priority	Low ATS priority
Time Frame	Short-term
Dependencies	Nature Center capacity and partnership; access to existing transit vehicle; funding for renting new vehicles
Potential Funding Sources	Federal Lands Access Program; Federal Lands Transportation Program
Partners	Martin County; Hobe Sound Nature Center Foundation; School district
Peer costs	Costs of vehicle rental and drivers

Long-term Opportunities

The cost estimates in the "peer cost" sections are compiled from Rails to Trails Conservancy (http://www.railstotrails.org/ourwork/trailbuilding/toolbox/informationsummaries/trail_surfaces.html) and FDOT Greenways and Trails Planning Resources.

Pedestrian and Bicycle Connections with Dickinson State Park	
Project Description	Establish a safe means for visitors to travel between the refuge (Mainland Tract) and Dickinson State Park without the use of a personal vehicle. The connection would likely include a multi-use trail through the State Park that leads to a pedestrian crossing (likely an underpass or overpass) of Federal Highway near the Nature Center entrance. The project may also include a multiuse path along Federal Highway separated by a guardrail or other barrier.
Refuge Priority	Highest ATS priority
Time Frame	Medium-term, requires funding for an underpass or overpass. May also align with any long-term rehabilitation of Federal Highway.
Dependencies	The Florida Trail Association has proposed the Ocean to Lake East Trail (a spur of the Florida Trail) that currently has segments in Dickinson State Park and will eventually connect to the refuge. This would include a crossing of Federal Highway. While groups are actively working on fundraising and implementing trail segments, there is no near-term plan for trail construction in the refuge vicinity. FDOT has plans to widen Federal Highway, and in doing so they will likely include safer non-motorized infrastructure. The refuge may be able to request an underpass or overpass as mitigation for likely refuge impacts.
Potential Funding Sources	Federal Lands Access Program; Transportation Alternatives Program/ Florida Recreational Trails Program; Florida Forever; Land and Water Conservation Fund
Partners	Dickinson State Park Florida DOT Florida East Coast Railroad Martin County Florida Trail Association
Peer costs	$200,000 to 300,000 per mile for paved trail; $100,000 per mile for unpaved trail

Pedestrian Paths on Jupiter Island Tract	
Project Description	Construction of pedestrian paths on levees within the Jupiter Island Tract (included in CCP)
Refuge Priority	Medium ATS priority
Time Frame	Long-term
Dependencies	Funding, refuge capacity
Potential Funding Sources	Federal Lands Transportation Program; Florida Forever; Florida Recreational Trails Program

ADA Accessible Path on Mainland Tract	
Project Description	Construction of boardwalk or other ADA accessible paths from the Nature Center to the Indian River Lagoon; the path should be accessible to all users and potentially accommodate a golf-cart-type vehicle.
Refuge Priority	High ATS priority
Time Frame	Medium-term
Dependencies	Funding, refuge capacity
Potential Funding Sources	Federal Lands Transportation Program; Florida Forever; Florida Recreational Trails Program; Hobe Sound Nature Center Foundation
Partners	Hobe Sound Nature Center Foundation
Peer Costs	Up to $2 million per mile (boardwalk) or $100,000 per mile (crushed shell/stone)

Pinckney Island National Wildlife Refuge

Background and Opportunities

Station Background

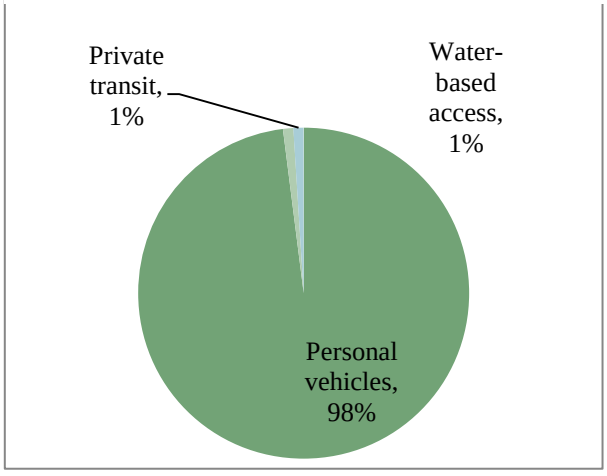
Pinckney Island National Wildlife Refuge, part of the Savannah Coastal Refuges Complex, is located in Beaufort County, South Carolina, one-half mile west of Hilton Head Island. The Refuge borders Skull Creek (the Intracoastal Waterway) on the east and Mackay Creek on the west, and is comprised of five islands. The refuge contains mostly salt marsh and tidal creeks, with land-based public use limited to Pinckney Island (Harry, Big Harry, Corn, and Buzzard Islands are all closed to public access). Visitors come to walk and bicycle the trails and gravel roads on the island, viewing wading birds, raptors, deer, and alligators. Fishing (especially by kayak) is also a popular activity in marshes and other saltwater adjacent to the refuge. The majority of Refuge visitors are tourists or seasonal residents of Hilton Head and Bluffton, with peak visitation occurring in the winter and spring. The Pinckney Island Refuge is unstaffed and has no restrooms or drinking water available to the public; there are no entrance fees for visitors.

The land-based access to the refuge is via U.S. Highway 278, a 4-lane highway connecting Hilton Head Island with the mainland. With average daily traffic of over 58,000 vehicles, the highway poses safety risks for vehicles turning into and out of the refuge and precludes bicycle and pedestrian access from off-site locations.

RATE Questionnaire Responses

- Distance from the nearest transit station: More than 3 miles
- Distance from the nearest regional trail: More than 3 miles
- Transportation challenges
    - Lack of safe vehicular access on to the Refuge.
    - ~~o~~ Unsafe and congested road conditions surrounding the Refuge.
    - Parking for buses and larger vehicles
    - Staff capacity and funding shortages
- Quote from the questionnaire: *"A significant portion of Pinckney Island NWR's visitors are familiar with or would use transit and people who would bicycle. All visitors walk, bicycle, or boat for travel within the refuge."*

Figure 20: Visitor Access by Mode at Pinckney Island NWR



Existing Alternative Transportation

Non-motorized Trails

All regular access beyond the entry road and parking lot is by foot or bicycle. There are more than 20 miles of unpaved administrative roads and recreational trails across Pinckney Island. Approximately 80 percent of visitors stay within a few miles of the parking lot, with many walking to view birds at Ibis Pond and then returning to their cars. Bicyclists have greater access to more parts of the refuge but tend to stay on established roads (due to unsafe access on Highway 278, bicyclists bring their bikes via vehicle). Visitors with limited mobility, including many older visitors, are unable to access many refuge resources.

Water-based Transportation

A heavily-used public boat ramp is located on refuge land and leased to Beaufort County. This area of the refuge is south of Highway 278, and few visitors cross between the two during their visit. Visitors may also access the refuge from its surrounding waterways, but there are no docking facilities or other means to access the land-based part of the refuge. The boat ramp is separated from the rest of the refuge by the Highway, and crossing between the two is difficult. One recommendation of the refuge's 2010 Transportation Study was to add an underpass beneath Highway 278 so that visitors using the refuge or the boat ramp do not have to make unsafe left turns onto or off of the highway.

Transit

Refuge staff express concern that visitation levels are increasing and may exceed the resource carrying capacity. The 26 space parking lot now forms a natural maximum visitation level (if there are no formal or informal parking spots free, potential visitors usually leave). Since many visitors walk the trails to Ibis Pond, the resource impacts are greatest in that area. The refuge believes internal transit may help minimize visitor impacts and disperse their use. The refuge also expresses some concern that public transit for access to the refuge may aggregate the issue by increasing the number of visitors beyond the current capacity. The refuge does not currently allow private golf cart or other motorized vehicle use beyond the parking lot, and it would prefer to restrict private vehicle use to control resource impacts.

Partnerships

The refuge has good existing relationships with Beaufort County and the City of Hilton Head. The refuge is actively working with the County for small-scale safety improvements to Highway 278, such as traffic control and lowering speeds during special refuge events. All partners are very supportive of implementing recommendations from the refuge's 2010 Transportation Plan, but no one has funding to do so. South Carolina DOT has long-term plans to widen Highway 278 and replace or rehabilitate an older bridge to Hilton Head, but there are no plans to start the project within the next 10 years.

In the 2010 Census, the Hilton Head/Bluffton area received an urban designation and is in the process of forming a metropolitan planning organization (MPO). The Low Country Area Transportation Study MPO is currently drafting its first long-range transportation plan.

Opportunities and Needs

Short-term Opportunities

Internal Transit	
Project Description	Use golf carts or electric trams to extend access for visitors (especially limited mobility visitors) beyond the refuge parking lot as part of an educational tour.
Refuge Priority	Highest ATS priority
Time Frame	Short-term for pilot, medium-term for regular transit service
Dependencies	Transit vehicle availability; transit vehicle must be easy to get in and out
Potential Funding Sources	FLTP; friends groups
Partners	Other refuges and public land units within driving distance
Peer costs	The FWS Trammo II (Electric Vehicle) Study cited a cost of approximately $25,000 for the purchase of a 11 passenger ADA-accessible citEcar electric shuttle.

Transit Access to the Refuge	
Project Description	Transit vehicle with bicycle storage that transports visitors from Hilton Head or from Bluffton to the refuge. Service would likely be seasonal and/or weekends only. The system may be modeled on the Cape Cod Regional Transit Authority bicycle shuttle system.
Refuge Priority	Low ATS priority
Time Frame	Short-term for pilot, Medium-term for regular transit service
Dependencies	Transit vehicle availability; safe turning lanes for buses; demand from visitors; partnerships with existing bicycle tour operators
Potential Funding Sources	FLAP; partner funding or grant sources; user fees
Partners	School or community groups; Hilton Head Island tourism board or Chamber of Commerce; Beaufort County; cycling businesses
Peer costs	From Cape Cod bicycle shuttle system (TRIP application): Purchase of 12-passenger vans with trailers to haul bicycles = $75,000 per vehicle Construction of associated infrastructure = $100,000 Anticipated operating costs are $15/hour plus $3,000 per year for fuel and maintenance

Long-Range Transportation Planning	
Project Description	Participation in the Low Country Area Transportation Study in the development of its LRTP. Through active involvement, the refuge has a unique opportunity to include its transportation needs in the region's planned programming of Federal funds over the next 20 years.
Refuge Priority	Medium ATS priority
Time Frame	Short-term
Dependencies	Refuge staff capacity; MPO partnership

Potential Funding Sources	None needed, but potential to leverage new Federal and State funds
Partners	MPO; local elected officials

Long-term Opportunities

Highway 278 Underpass (Connect Boat Ramp and Refuge Entrance Road)	
Project Description	Construct an underpass beneath Highway 278 connecting the refuge entrance road and the County boat ramp access area. The underpass would improve safety for all users by eliminating the need for left turns on to or off of the highway.
Refuge Priority	High ATS priority
Time Frame	Long-term
Dependencies	Funding
Potential Funding Sources	If SCDOT widens/improves Highway 278, the underpass could be provided as part of mitigation for likely impacts to refuge lands; FLAP; FLTP, other County, State, or Federal transportation funds
Partners	SCDOT; Beaufort County

Safe Bicycle and Pedestrian Access from Hilton Head or Bluffton	
Project Description	Provide a separated multiuse path on Highway 278 that allows safe access for pedestrians and bicyclists from Hilton Head and the mainland.
Refuge Priority	High ATS priority
Time Frame	Long-term
Dependencies	SCDOT widening or improving Highway 278 (very unlikely to complete project of this scale otherwise); underpass at refuge necessary for crossing 278
Potential Funding Sources	If SCDOT widens/improves Highway 278, the path could be provided as part of mitigation for likely impacts to refuge lands.
Partners	SCDOT; Hilton Head; Beaufort County

Red River National Wildlife Refuge

Background and Opportunities

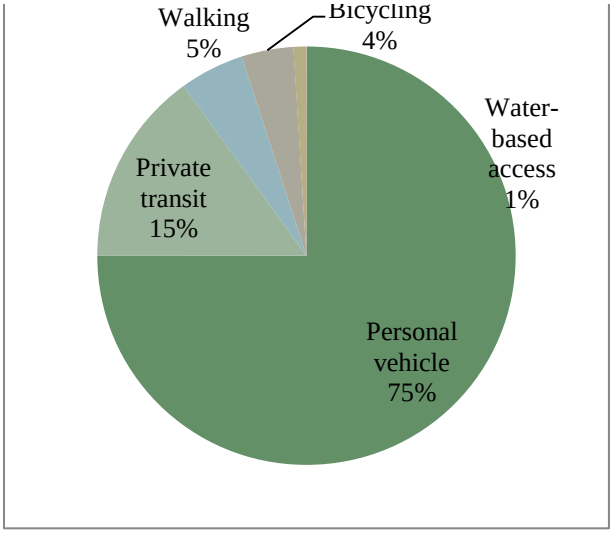
Station Background

The Red River National Wildlife Refuge was authorized by Congress in 2000, making it a relatively young refuge. The refuge includes four units along 120 miles of Louisiana's Red River. Hunting is the main activity at the three undeveloped units. The Headquarters Unit (which prohibits hunting) is located adjacent to the Shreveport/Bossier City metropolitan area, and receives higher numbers of hikers, birders, and other recreationists. The newly-developed Headquarters Unit is popular with local residents and tourists, and this popularity is expected to increase now that the Arthur Teague Parkway has been built along the northern edge of the refuge. The Parkway improved access for motorists, but severed an access road that once offered access to residents in the neighborhoods directly northeast of the refuge.

RATE Questionnaire Responses

- Distance from the nearest transit station: 1 to 3 miles (Sportran)
- Distance from the nearest regional trail: Greater than 1 mile (Red River Waterway Commission Trail)
- Transportation challenges
    - Appropriate and effective signage
    - Unsafe road conditions surrounding station
    - Road and trail conditions

Figure 21: Visitor Access by Mode at Red River NWR



Existing Alternative Transportation

Non-motorized Trails

The Headquarters Unit is not directly connected to any regional trails. The southern terminus of the regional Red River Waterway Commission (RRWC) Trail is approximately one mile north of the refuge and is currently popular, but few if any refuge visitors use it for access. Barriers in the way include two crossings of the new Parkway and one crossing of the Jimmy Davis Highway. The trail is managed by the Red River Water Commission with cooperation from Bossier City. Both parties, as well as Red River NWR and Bossier Parish, are supportive of extending the trail further south to connect with the refuge.

The refuge was formerly connected via a neighborhood road to Bossier City, providing easy and safe pedestrian and bike access. The construction of the Arthur Ray Teague Parkway severed this connection and replaced it with a highway crossing. The parish has proposed a new overpass to restore a safe connection.

Transit

Transit service in the greater Shreveport metropolitan area is provided by Sportran. Transit access to the refuge is poor, with the nearest Sportran route stopping approximately four and a half miles north of the refuge. This route, the number 14, runs on weekends and could provide cyclists a way to access the RRWC Trail to reach the refuge, but the wayfinding is not clear. Less than one percent of current visitors use public transit to reach Red River NWR.

As seen in the chart above, private transit accounts for 15 percent of visitors. Private transit refers to transit service provided by organizations solely for their clients. Examples include local school district buses transporting children to the refuge for field trips, senior center shuttles on excursions, private tour buses, and other similar arrangements. Red River NWR Headquarters Unit has a high rate of private transit visitors compared to Region 4 refuges as a whole, which attract about five percent of their visitors though private transit.

Partnerships

The refuge has a close working relationship with many local governments, a result of the wide dispersal of its stations. The Headquarters unit has a particularly close relationship with the Bossier Parish and Bossier City after arranging land swaps that allowed the Teague Parkway to be constructed. The agreement also included provisions for a new visitor center, signage, new access roads, and a pedestrian overpass. Although it is a relatively young refuge, Red River enjoys the support of a strong friends group, the Friends of Red River National Wildlife Refuge.

Opportunities and Needs

Short-term Opportunities

Signage to Direct Visitors to Headquarters Unit	
Project Description	Install signs along the Teague Parkway, Highway 71, and I-20 to direct drivers to the Headquarters Unit. Install signs at the current southern terminus of the RRWC trail to direct cyclists to the refuge and raise awareness.
Refuge Priority	Highest short-term priority.
Time Frame	Very short-term, some signage efforts currently underway.
Dependencies	Cooperation from Bossier Parish, Louisiana Department Of Transportation and Development (DOTD) to approve and install signs. The signage on the RRWC trail would be most effective if a safe crossing was available over the Teague parkway.
Potential Funding Sources	FWS operating funds; Bossier Parish/Louisiana DOTD labor to install signs
Partners	Bossier Parish; Louisiana DOTD

Visitor Trams for Internal Circulation	
Project Description	This would build off the popularity of golf carts occasionally used to help visitors travel around Headquarters Unit. A more formal program using a visitor tram would help more elderly and disabled visitors enjoy the refuge.
Refuge Priority	Medium priority
Time Frame	Short term
Dependencies	At least one visitor tram vehicle Staff and funding to operate tram tours
Potential Funding Sources	FWS or partner FLMA capital funds to purchase vehicle (FLTP); volunteer labor for operations; user fees
Partners	Friends of Red River NWR; nearby refuges or other FLMA units
Peer costs	The FWS Trammo II (Electric Vehicle) Study cited a cost of approximately $25,000 for the purchase of an 11 passenger ADA-accessible citEcar electric shuttle.

Overpass to Restore Pedestrian Access to Bossier Neighborhoods	
Project Description	Build an overpass over the Teague Parkway to restore local access into the Headquarters Unit.
Refuge Priority	High priority
Time Frame	Short to medium-term. Requires new construction over the parkway and access to trails/sidewalks on the refuge/city sides.
Dependencies	Cooperation with Bossier Parish, Bossier City
Potential Funding Sources	The refuge discussed funding with Bossier Parish, but there is no formal funding agreement.
Partners	Bossier Parish; Bossier City
Peer costs	Overpass cost is highly dependent on the barrier being spanned and the amenities included, and can range from $500,000 to over $4,000,000.[4]

Long-term Opportunities

Extend Red River Waterway Commission Trail to Headquarters Unit	
Project Description	The RRWC trail is the nearest regional trail to the refuge, but is still two miles short. The existing trail is a popular recreational route with local residents.
Refuge Priority	Highest long-term ATS priority
Time Frame	Long-term, requires planning, design, and construction work. Extension of an existing trail, which may reduce times compared to a new trail.
Potential Funding Sources	Federal Lands Access Program (FLH, Louisiana DOTD); Recreation Trails Program; Bossier Parish; RRWC Funding Programs

[4] http://safety.fhwa.dot.gov/saferjourney/library/countermeasures/07.htm

Partners	Red River Waterway Commission; Bossier Parish; Bossier City
Peer costs	Construction costs vary depending on surface and location, with $80,000 to $500,000 per mile listed as a possible range.[5] Planning, design, and ongoing maintenance work adds additional cost.

[5] http://www.railstotrails.org/ourwork/trailbuilding/toolbox/informationsummaries/trail_surfaces.html

Selected Regional ATS Opportunities

The ATS opportunity list includes the five stations that participated in calls with the RATE team (Crystal River, Eufaula, Hobe Sound, Pinckney Island, and Red River NWRs), which represent a spectrum of needs and opportunities in Region 4. The RATE team documented additional needs and opportunities at 23 refuges that have demonstrated significant needs and opportunities for alternative transportation in recent years through grant applications, independent unit level transportation studies, and responses to the Region 4 ATS questionnaire. Together, these refuges represent a sample of the greatest opportunities for ATS in Region 4, as demonstrated in the tables below. Visitation data comes from the 2011 Refuge Annual Performance Planning reports and the transit and trail distance is from the ATS questionnaire.

These 28 refuges represent a range of existing ATS conditions throughout the region, with some refuges having direct or proximate access to trails and transit, water-based transportation, internal transit services, and relationships with local and regional partners. While the list of opportunities and needs is not exhaustive, it represents some of the most promising ATS activities that have either not yet been funded or have been very recently funded and are still in the process of further scoping. It also represents several longer-term activities that may be relevant for many refuges throughout the region.

In addition to these 28 refuges, the RATE team noted numerous opportunities for using ATS at other Region 4 stations and recognizes that the potential needs for ATS in the region substantially exceed what can be identified in this initial assessment report.

1	Arthur R. Marshall Loxahatchee NWR Boynton Beach, Florida	Visitation	Transit Distance	Trail Distance
		335,000	More than 3 miles	Less than ½ mile
Existing ATS: • A separated path along US Highway 441 provides a safer route for pedestrians and cyclists to access the refuge. • Tour buses bring large groups to special events at the refuge.				
Opportunities: • Rehabilitate the US Highway 441 bike path, as it is currently in poor condition. • Implement a new transit service to access the station, relieving crowded access roads and parking lots while opening new travel opportunities for visitors.				

2	Bayou Cocodrie NWR Vidalia, Louisiana	Visitation	Transit Distance	Trail Distance
		4,489	More than 3 miles	More than 3 miles

Existing ATS:

- Twenty-five percent of refuge visitors use boats and paddlecraft on the refuge, which is located on a state scenic waterway.

Opportunities:

- Work with the parish and state to rehabilitate Poole Road, the main access route for visitors.
- Use signs and other treatments to reduce the transportation impact on the Louisiana Black Bear, a species of concern.
- Improve water-access for visitors.

3	Black Bayou Lake NWR Monroe, Louisiana	Visitation	Transit Distance	Trail Distance
		37,000	More than 3 miles	Unknown

Existing ATS:

- Monroe Transit and West Ouachita Transit offer transit service near the refuge, but the nearest stop is over three miles away.
- The refuge allows bicycling, canoeing, and kayaking.

Opportunities:

- Add multiuse paths to access the refuge and improve bicycle and pedestrian safety.
- Construct new bicycle and pedestrian paths for travel within the refuge.
- Improve signage for orientation to the refuge.

4	Cameron Prairie NWR Bell City, Louisiana	Visitation	Transit Distance	Trail Distance
		55,343	More than 3 miles	More than 3 miles

Existing ATS:

- There are no formal systems or routes, but some visitors use bicycles and watercraft to access the refuge. Other visitors arrive on organized trips via private transit such as school buses.

Opportunities:

- Use the next CCP revision to fully consider transportation issues as they relate to the management of the refuge.
- Work with local government to enforce speed limits on access roads leading to the refuge.

5	Cedar Keys NWR Cedar Key, Florida	Visitation	Transit Distance	Trail Distance
		19,500	More than 3 miles	More than 3 miles

Existing ATS:

- All visitors access the Keys via water-based transportation.

Opportunities:

- Add formal parking management during events such as the Light Station Open House. More than 400 visitors park all over the town of Cedar Key after filling the limited designated parking.
- Improve signage leading to the refuge.
- Rehabilitate boat ramps and docking piers to maintain water access.
- Incorporate transportation recommendations into the CCP currently being drafted by the refuge.

6	Crystal River NWR Crystal River, Florida	Visitation	Transit Distance	Trail Distance
		105,000	More than 3 miles	More than 3 miles

Existing ATS:

- There is paddlecraft access to springs sites and islands from boat ramps and rental businesses as several sites around Kings Bay.
- Shuttles from off-site parking to Three Sisters Springs during quarterly open house special events (in partnership with Citrus County Transit).

Opportunities:

- Construct a new bridge to access Three Sisters Springs without directing traffic down residential streets.
- Construct a trail to connect the refuge to the center of Crystal River, a distance of less than a mile. This would make non-motorized travel easier given road expansion anticipated in the area.
- Institute a permanent transit system to provide regular shuttle service from off-site parking to Three Sisters Springs as the main method of access. This would allow for minimal development at the Three Sisters Springs.
- Install interpretive kiosks at the four boat ramps providing water access to remind boaters of manatee etiquette. This could reduce the transportation impact on manatees by encouraging proper distance and slow speeds.

7	D'Arbonne NWR West Monroe, Louisiana	Visitation	Transit Distance	Trail Distance
		22,680	More than 3 miles	Unknown

Existing ATS:

- Water recreation is popular at the refuge, and 30 percent of visitors use it to reach or travel within D'Arbonne NWR.

Opportunities:

- Improve water access ramps to improve the visitor boating experience.
- Improve signage within and leading to the refuge to better orient visitors and raise the profile of the refuge in the area.
- Construct pedestrian trails.

8	Eufaula NWR Eufaula, Alabama	Visitation	Transit Distance	Trail Distance
		381,015	More than 3 miles	More than 3 miles

Existing ATS:

- The refuge has one designated walking trail
- Water recreation is popular at the refuge, with two public boat ramps owned by FWS. Non-motorized boating is the only boating allowed in waterfowl impoundments.
- Bicycles and pedestrians are permitted on gravel roads, including those closed to private vehicles. The refuge website encourages hunters, fishermen, and wildlife observers to use bicycles to access remote parts of the refuge.
- A small number of visitors access the refuge via tour buses through private groups; tours generally follow the Wildlife Drive.

Opportunities:

- Construct an ADA-accessible pedestrian trail near the refuge office to address the refuge's ongoing challenge of offering access to a variety of visitors.
- Update brochures to increase awareness of multimodal access and recreation opportunities; add appropriate signage to help with visitor orientation to the refuge, within the refuge, between units, and connecting with other local destinations.
- In cooperation with local partners, develop a designated water trail for non-motorized boats. The trail should increase accessibility for water-based transportation and include interpretive elements.
- Connect to the adjacent state park with pedestrian trails or multiuse paths.
- Use transit vehicles or offer guided pedestrian tours led by Friends Group volunteers. Tours can operate on gravel roads closed to private vehicles. (There is some interest also expressed in equestrian tours).

9	Harris Neck NWR McIntosh County, Georgia	Visitation	Transit Distance	Trail Distance
		88,000	More than 3 miles	More than 3 miles

Existing ATS:

- Ten percent of refuge visitors access the refuge via private transit. An additional 15 percent access the refuge via walking or bicycling. Five percent use boats.
- The station allows bicycling and has a significant amount of visitors who bicycle.
- The Altamaha Historic Scenic Byway is located close to the refuge.

Opportunities:

- Coordinate with the Coastal Georgia Bike Trail to access the refuge.
- Improve bicycling infrastructure throughout the refuge, such as building bike trails and placing bike racks at popular destinations.
- Implement peak-season internal transit to allow visitors to move throughout the refuge without a car.
- Use social media and physical signs to better promote cycling and walking to and within the refuge.

10	Hobe Sound NWR Hobe Sound, Florida	Visitation	Transit Distance	Trail Distance
		113,000	More than 3 miles	Less than ½ mile

Existing ATS:

- A wide shoulder alongside Federal Highway is considered a bike path (although it is considered unsafe for actual use).
- An existing pedestrian/cyclist underpass north of the refuge makes use of a railroad crossing to help cross Federal Highway.
- Low-traffic and low-speed refuge access road accommodates cyclists once they reach the refuge.
- Wide sidewalk on the refuge access road accommodates pedestrians.

Opportunities:

- Implement shuttle service between Hobe Sound's mainland unit and the adjacent Jonathan Dickinson State Park, bridging a distance of two miles and crossing a highway that acts as a major barrier to cyclist and pedestrian connectivity.
- Construct an overpass or underpass to allow pedestrians and cyclists to cross between the state park and the wildlife refuge. A bike path alongside the highway already provides a safer route that crosses most of the distance between the two. However, the lack of a signalized intersection makes crossing extremely dangerous.
- Improve signage to the Jupiter Island unit to help orient and direct cyclists.

11	J.N. "Ding" Darling NWR Sanibel, Florida	Visitation	Transit Distance	Trail Distance
		674,312	More than 3 miles	Direct Connection

Existing ATS:

- The Sanibel Shared Use Path provides a direct connection between the refuge and other destinations on Sanibel Island. More than a linear path, the trail now provides a network of several routes around the Island and through the community of Sanibel.
- The Great Calusa Blueway Paddling Trail promotes kayaking in the waters surrounding Sanibel Island and passes by the refuge.
- Tram and bike tours within the refuge give visitors expert interpretation while also removing vehicle traffic from refuge roads such as the Wildlife Drive.
- As of early 2013, the refuge is in the final stages of drafting an alternative transportation study.

Opportunities:

- Improve safety on the Tarpon Bay Road by building a separated path for cyclists and pedestrians. This would extend the network of safe routes and allow these users to spend less time and distance on road shoulders.
- Expand tram service to meet high levels of demand and provide a better, more frequent service.
- Improve signage for all users, including cyclists and kayakers.

12	Mattamuskeet NWR Swan Quarter, North Carolina	Visitation	Transit Distance	Trail Distance
		81,400	More than 3 miles	More than 3 miles

Existing ATS:

- The refuge has historically offered open-air tram tours on an annual basis, offering guided access to sensitive sites that are normally closed to the public.

Opportunities:

- Improve signs that guide visitors to the refuge.
- Improve signs that orient visitors within the refuge.
- Improve parking for buses and other large vehicles.

13	Merritt Island NWR Titusville, Florida	Visitation	Transit Distance	Trail Distance
		716,737	More than 3 miles	More than 3 miles

Existing ATS:

- Private tour buses combine itineraries with refuge destinations and the Kennedy Space Center.
- Water access points for canoeists and kayakers.

Opportunities:

- Complete the transportation recommendations written into the refuge's CCP.
- Use the refuge's van to implement a transit pilot program to test the feasibility of using transit to move visitors around the refuge.
- Promote concessionaire wildlife bus tours to reduce traffic and offer expert interpretation to visitors.
- Improve canoe and kayaking visits by designating paddling trails, improving water access, and installing signage.
- Work with the Kennedy Space Center to improve safety for the Center's bicycle commuters.
- Reduce transportation's impact on threatened species with wildlife crossings and educational signs.

14	Mountain Longleaf NWR Anniston, Alabama	Visitation	Transit Distance	Trail Distance
		8,000	More than 3 miles	More than 3 miles

Existing ATS:

- Approximately two percent of visitors access the refuge by walking.
- The refuge allows bicycling in designated areas.

Opportunities:

- Use private transit (such as school buses or senior center vans) to move visitors to and around the refuge during anticipated special events.
- Use rugged transit vehicles to take visitors on roads that may be impassible to passenger cars.
- Hire permanent maintenance staff to conduct routine maintenance on roads and other transportation infrastructure.

15	Okefenokee NWR Folkston, Georgia	Visitation	Transit Distance	Trail Distance
		177,418	More than 3 miles	More than 3 miles

Existing ATS:

- The existing Canoe Trail provides a way for visitors to see wildlife from paddlecraft.
- Some transit during special events, such as the Okefenokee festival.

Opportunities:

- Complete transportation recommendations in CCP.
- Implement a tram to shuttle visitors around the Wildlife Drive, marked as the refuge's highest priority in the RATE.
- Maintain the canoe trail access points in the face of falling water levels.
- Improve pedestrian and cyclist access to the refuge by building paths.
- Build ADA-accessible trails at each major refuge entrance.
- Develop a network of boardwalks by connecting the existing "spurs" of boardwalk trail.
- Install signs on area highways to direct visitors to the refuge.

16	Overflow NWR Wilmot, Arkansas	Visitation	Transit Distance	Trail Distance
		10,000	More than 3 miles	More than 3 miles

Existing ATS:

- Pedestrian paths and hiking trails exist throughout the refuge.
- The refuge offers several paddling access points.

Opportunities:

- Improve signage that directs visitors to and within the refuge.
- Rehabilitate and harden existing trails to reduce the maintenance required from the refuge's small staff and resources.
- Construct new pedestrian trails within the refuge to open up new areas for visitors.

17	Pea Island NWR Hatteras Island, North Carolina	Visitation	Transit Distance	Trail Distance
		1,600,000	More than 3 miles	More than 3 miles

Existing ATS:

- Some of the final miles of the Mountains to Sea Bike Trail run through the refuge.

Opportunities:

- Rehabilitate boat ramp.
- Implement a tram service to move visitors within the refuge.
- Improve connectivity with the Mountains to Sea bike trail. The trail passes through the refuge but is often isolated from the refuge's amenities.
- Harden transportation infrastructure against storms.
- Reduce wildlife strikes, especially of threatened and endangered species on NC Highway 12.

18	Pelican Island NWR Vero Beach, Florida	Visitation	Transit Distance	Trail Distance
		90,000	More than 3 miles	Direct Connection

Existing ATS:

- Direction connection to the Jungle Trail, which continues to several other destinations on the barrier islands.
- The GoLine Bus system offers transit service in the Vero Beach area, but the nearest service is more than 3 miles from the refuge.
- Pelican Island has seasonal transit service in the refuge.
- The Indian River Lagoon National Scenic Byway is within a few miles of the refuge. The refuge is also a National Historic Landmark, a Wetland of International Importance, and America's First National Wildlife Refuge.
- The Pelican Island Wildlife Festival attracts approximately 8,000 visitors in March. The refuge uses partnerships and overflow parking to manage visitation.

Opportunities:

- Improve the condition of internal trails, especially as caused by flooding and wash outs.
- Improve directional signage for visitor orientation to and within the station.
- Consider offering transit for low-income areas close to the refuge.

19	Pinckney Island NWR Beaufort County, South Carolina	Visitation	Transit Distance	Trail Distance
		199,598	More than 3 miles	More than 3 miles

Existing ATS:

- Twenty miles of unpaved administrative roads are used for biking and walking in the refuge.
- Beaufort County boat ramp on the refuge offers access for motorized and non-motorized boats.

Opportunities:

- Use golf carts or electric trams to extend access for visitors (especially limited mobility visitors) beyond the refuge parking lot as part of an educational tour.
- Transit vehicle with bicycle storage that transports visitors from Hilton Head or from Beaufort to the refuge. Service would likely be seasonal and/or weekends only.
- Construct an underpass beneath Highway 278 connecting the refuge entrance road and the County boat ramp. The underpass would improve safety for all users by eliminating the need for left turns on to or off of the highway. This project would be contingent upon South Carolina DOT widening or improving Highway 278.
- Provide a separated multiuse path on Highway 278 that allows safe access for pedestrians and bicyclists from Hilton Head and the mainland. This project would be contingent upon South Carolina DOT widening or improving Highway 278.

20	Red River NWR Bossier City, Louisiana	Visitation	Transit Distance	Trail Distance
		1,400	1 to 3 miles	Less than ½ mile

Existing ATS:

- Sportran (the transit provider for the greater Shreveport metropolitan area) Route 14 offers service near the refuge, but the nearest stop is four miles away. This service may offer bicyclists access to the Red River Water Commission Trail (see below).
- The southern terminus of the regional Red River Waterway Commission (RRWC) Trail, a paved multi-use trail, is approximately one mile north of the refuge, but several roads form barriers for trail users to access the refuge.

Opportunities:

- Install signs along the Teague Parkway, Highway 71, and I-20 to direct drivers to the Headquarters Unit. Install signs at the current southern terminus of the RRWC trail to direct cyclists to the refuge and raise awareness.
- Extend the RRWC Trail to the Headquarters Unit. The RRWC trail is the nearest regional trail to the refuge, but is still two miles short. The existing trail is a popular recreational route with local residents.
- Use visitor trams for internal circulation at the refuge, building off the popularity of golf carts occasionally used to help visitors travel around Headquarters Unit. A more formal program using a visitor tram would help more elderly and disabled visitors enjoy the refuge.
- Build a pedestrian overpass over the Teague Parkway to restore local access into the Headquarters Unit.

21	Sam D. Hamilton Noxubee NWR Brooksville, Mississippi	Visitation	Transit Distance	Trail Distance
		154,000	More than 3 miles	More than 3 miles

Existing ATS:

- The refuge has witnessed a significant increase in bicycle use, although there is limited infrastructure in place to accommodate the bicyclists. There are some challenges balancing the conflicts between bicyclists, cars, and protection of resources.

Opportunities:

- Use ATS, including bicycles, walking, and transit, to manage visitation and parking, which is currently a major challenge at the refuge.
- Add bicycle lanes and other infrastructure to improve bicycle travel along Oktoc Road leading to refuge. The CCP recommendations discuss bike trails, developed walking trails, and road access.
- Improve bicycling infrastructure throughout the refuge, such as building bike trails and placing bike racks at popular destinations.
- Use private transit (such as school buses or senior center vans) to move visitors to and around the refuge during anticipated special events.
- Develop separate walking trails for visitors to travel within the refuge.
- Improve signage for orientation to and within the station.

22	Santee NWR Summerton, South Carolina	Visitation	Transit Distance	Trail Distance
		181,115	More than 3 miles	Direct connection

Existing ATS:

- Charleston County Parks provides transit service near the Bluff Unit, but service is more than 3 miles from the refuge.
- The refuge offers transit service within their station year-round.
- The refuge offers biking in designated areas.
- The Palmetto Trail is a 315 mile trail running through South Carolina offering access to bicyclists and pedestrians. The Santee Passage of the Palmetto Trail is 13 miles long and covers dirt and rural roads.
- The Cuddo Canoe/Kayak Trail offers access for non-motorized boaters within the refuge.

Opportunities:

- Demarcate water boundaries and designate boating trails with improved routing and signage.
- Improve signage for orientation to access the station and within the station.
- Use social media and other promotional outlets to educate visitors about existing and new ATS.
- Construct new bicycle and pedestrian trails for travel within the refuge.

23	Savannah NWR Hardeeville, South Carolina	Visitation	Transit Distance	Trail Distance
		98,170	More than 3 miles	More than 3 miles

Existing ATS:

- The refuge uses transit during National Wildlife Refuge Week events in October, which attract several hundred visitors each year.
- There is a small portion of the refuge visitors who enjoy bicycling within the refuge.

Opportunities:

- Construct and improve bicycle and pedestrian trails within the station.
- Improve signage to direct visitors to roadside trails and parking, and for orientation to the station.
- Explore opportunities for a refuge tram or shuttle to access the station or transport visitors within the station. The nearest transportation hub is approximately seven miles away.

24	St. Marks NWR St. Marks, Florida	Visitation	Transit Distance	Trail Distance
		257,000	More than 3 miles	1-3 miles

Existing ATS:

- The refuge estimates that five percent of its visitors come via private transit, and an additional 10 percent access the refuge by bicycling, walking, or boating. Bicycling is also a popular refuge activity.
- The St. Marks Historic Railroad State Trail is a 20.5 mile paved trail connecting Tallahassee with St. Marks; the trail comes within a few miles of the refuge.
- The Big Bend Scenic Byway and the Great Florida Birding Trail pass through the refuge.

Opportunities:

- Make improvements and add traffic calming for pedestrian and bicycle safety.
- Institute internal transit year-round, for access to the refuge from St. Marks, and during special events. This may also include satellite refuge parking near U.S. 98, with shuttles to bring visitors to the refuge.
- Construct new bicycle paths for access to the station, especially in connection with existing bicycle trails around St. Marks.

25	Tennessee NWR Linden, Tennessee	Visitation	Transit Distance	Trail Distance
		378,000	More than 3 miles	More than 3 miles

Existing ATS:

- Boat ramps allow for visitor water access.
- There is some use of transit for major events, such as the January Waterfowl/Eagle Tour which attracts five hundred people in a day.

Opportunities:

- Improve an access road that would all for better hauling of supplies (such as gravel). The current access route has a weight limit of fifteen tons, which makes meeting the refuge's own transportation needs difficult.
- Improve signage leading the refuge from major highways and interstates.

26	Theodore Roosevelt Complex Central Mississippi	Visitation	Transit Distance	Trail Distance
		100,000	More than 3 miles	More than 3 miles

Existing ATS:

- Approximately five percent of refuge visitors access the refuges via walking, bicycling, or boat. The refuges allow canoeing and kayaking, and some allow bicycling in designated areas.
- The Great River Road National Scenic Byway is within a few miles of the refuge.

Opportunities:

- Improve signage for visitor orientation.
- Improve the condition of internal bicycle and pedestrian trails, and consider adding new trails.
- Consider the use of internal transit on a seasonal basis.

27	Waccamaw NWR Georgetown, South Carolina	Visitation	Transit Distance	Trail Distance
		6,114	More than 3 miles	Less than ½ mile

Existing ATS:

- Twenty percent of refuge visitors arrive via private transit, and an additional 17 percent access the refuge via walking or bicycling.
- Horry County Public Bus System provides transit near the Waccamaw Visitor Center, but the distance is greater than three miles.
- Waccamaw offers year-round transit within the station.
- Coastal Carolina University has a trail that is located within ½ mile of the refuge.
- Waccamaw is on a State Scenic River and Highway, a Blueways Trail, and nominated for a National Water Trail. The Cox Ferry Lake Recreational Area of the refuge has trails that explore diverse habitats and a boardwalk.

Opportunities:

- Plan for improved access and safety for pedestrians and for general internal road improvement.
- Improve trail connections to and from the refuge. The refuge is planning several trails, including current plans to link a water trail with a pedestrian trail.
- Construct new pedestrian and bicycle trails for travel within the station.
- Promote and market ATS.

28	Wapanocca NWR Turrell, Arkansas	Visitation	Transit Distance	Trail Distance
		61,050	More than 3 miles	More than 3 miles

Existing ATS:

- The Mississippi River Greenway in Memphis, Tennessee, is the nearest major regional trail. It is located approximately 10 miles east along the Mississippi River.
- The Great River Road National Scenic Byway is within a few miles of the refuge.

Opportunities:

- Improve signage for visitor orientation to and within the station, specifically adding signs for the refuge along Interstate 55.
- Improve the condition of the Highway 42 railroad underpass.
- Consider the use of transit for special events from Memphis (Tennessee) or from West Memphis/Marion (Arkansas).