

Technical Memorandum on the Effects
of the
Mid Currituck Bridge Project
on
Rufa Red Knot
(*Calidris canutus rufa*)
and
Northern Long-Eared Bat
(*Myotis septentrionalis*)

WBS Element: 34470.1.TA1
STIP No. R-2576
Currituck County
Dare County

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Currituck and Dare County, North Carolina

1.0 Background

This technical memorandum addresses the Mid-Currituck Bridge Project and its potential impact on rufa red knot (*Calidris canutus rufa*) and northern long-eared bat (*Myotis septentrionalis*) in compliance with Section 7 (C) of the Endangered Species Act (ESA) of 1973, as amended in 1978. In compliance with Section 7 of the ESA, consultation and/or conferencing with US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) is required to ensure federal actions do not jeopardize the continued existence of any threatened, endangered, or proposed species or result in the destruction or adverse modification of critical habitat.

The federal lead agency for the 2012 Final Environmental Impact Statement (FEIS) for the Mid-Currituck Bridge project, pursuant to the National Environmental Policy Act (NEPA), is the Federal Highway Administration (FHWA). The US Army Corps of Engineers (USACE) and the US Coast Guard are cooperating agencies. This assessment was prepared as a part of meeting the consultation and/or conferencing requirements for all three agencies.

A Biological Assessment (BA) was prepared by FHWA and the North Carolina Turnpike Authority (NCTA) in June 2011 (CZR, Incorporated, 2011) for the Mid-Currituck Bridge Project Preferred Alternative in support of the Final Environmental Impact Statement (FHWA and NCTA, 2012). The BA was used in Section 7 consultation with both USFWS and NMFS concerning 13 federally-protected species occurring in Currituck and Dare Counties. USFWS concurred with the Biological Conclusions for protected species under their jurisdiction in a letter dated July 8, 2011 and formal consultation was not needed. NMFS concurred with the Biological Conclusions for species under their jurisdiction in a letter dated October 18, 2011 and formal consultation was not needed. Consultation was considered completed unless a take occurred or new information revealed effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the proposed project.

The statutory authorities listed in the 2011 BA remain unchanged.

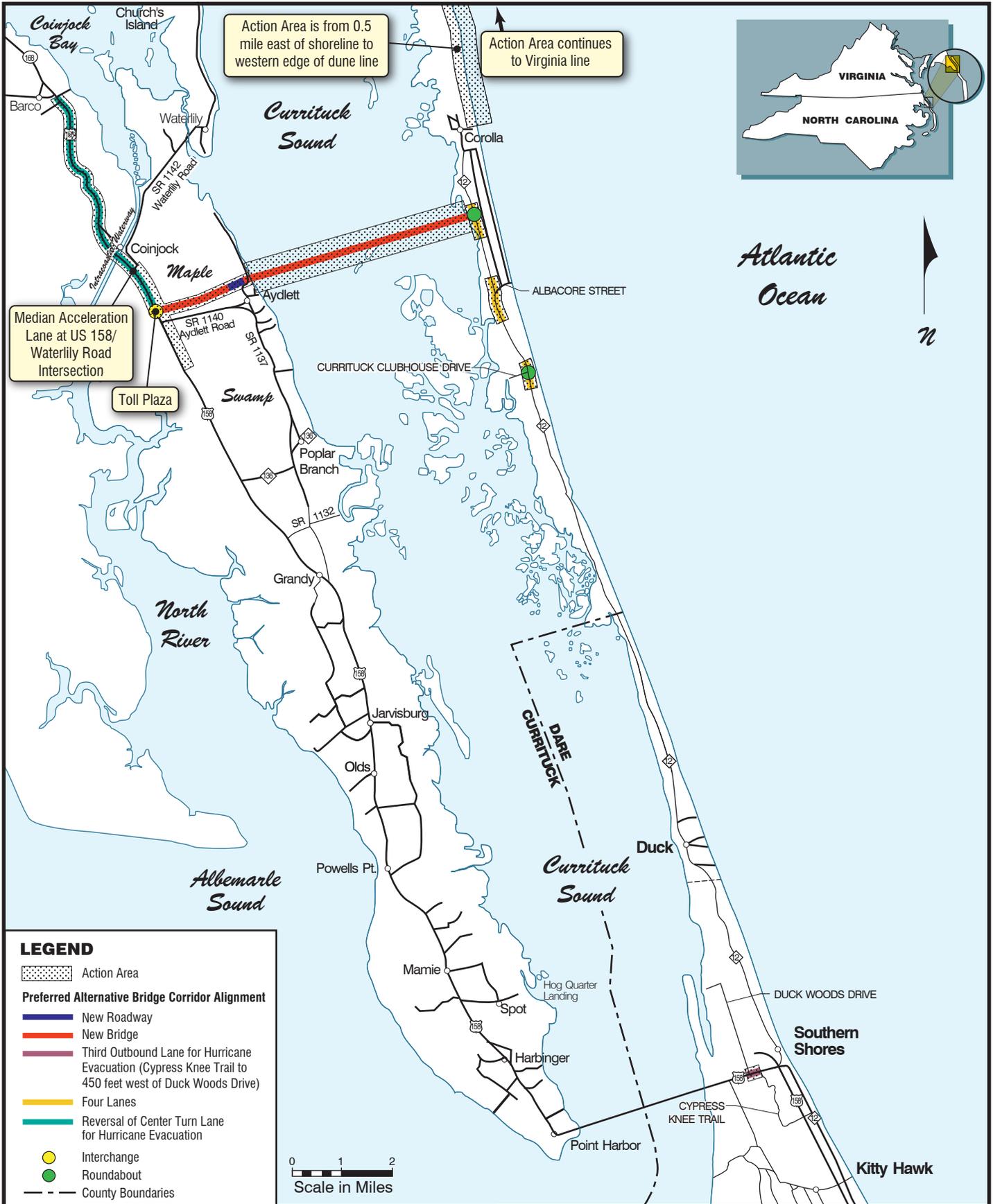
Since the publication of that BA, the rufa red knot and northern long-eared bat were listed as threatened by the USFWS in 2014 and 2015, respectively; therefore, this technical memorandum provides updated information to the 2011 BA and 2012 FEIS. This technical memorandum addresses the potential direct, indirect, and cumulative effects of the Mid-Currituck Bridge Project's Preferred Alternative on the rufa red knot. The analysis in this technical memorandum is based on current (i.e., 2015) and predicted conditions within the action area, as revised since the 2011 BA. Additional specific data, text, and figures describing project details, timing of proposed activities, and existing conditions are found in the 2012 FEIS, the associated natural resources report (*Natural Resources Technical Report* [CZR, Incorporated, 2011]), and the 2011 BA.

USFWS has developed a programmatic biological opinion (PBO) in conjunction with FHWA, USACE, and NCDOT for the northern long-eared bat (NLEB) (*Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for NLEB for the NCDOT program is "May Affect, Likely to Adversely Affect." The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Currituck County where the Mid-Currituck Bridge Project, is located.

The Preferred Alternative as it is referred to in this technical memorandum is defined as a new 4.7-mile long, two-lane bridge across Currituck Sound, its associated interchanges/approaches, and also, improvements to NC12 on the Outer Banks.

2.0 Action Area

The action area for this Biological Assessment is shown Figure 1. The action area represents the area of potential indirect and direct effects of the Preferred Alternative on protected species under NMFS and USFWS jurisdiction. The action area is in northeastern North Carolina within Currituck County and Dare County, within the Tidewater Region of the Atlantic Coastal Plain physiographic province. The portion of the action area that encompasses the Preferred Alternative reflects the following project components: a segment of US 158 where lanes could be reversed for hurricane evacuation, an interchange with US 158, the mainland approach road to Currituck Sound (including a bridge across Maple Swamp), the Mid-Currituck Bridge over the Currituck Sound, the Outer Banks approach road to the Mid-Currituck Bridge, improvements to NC 12 south of the bridge, and a third outbound lane for hurricane evacuation on US 158 between the Wright Memorial Bridge and the US 158/NC 12 intersection. Potential indirect effects add to the action area the dune line and beach between the northern end of NC 12 and the Virginia line. Its eastern boundary is 0.5 mile east of the shoreline and its western boundary is the western boundary of the dune line. Potential indirect effects also add to the action area developable land near the US 158/Mid-Currituck Bridge interchange.



Action Area is from 0.5 mile east of shoreline to western edge of dune line

Action Area continues to Virginia line

Median Acceleration Lane at US 158/Waterlily Road Intersection

Toll Plaza

LEGEND

- Action Area
- Preferred Alternative Bridge Corridor Alignment**
- New Roadway
- New Bridge
- Third Outbound Lane for Hurricane Evacuation (Cypress Knee Trail to 450 feet west of Duck Woods Drive)
- Four Lanes
- Reversal of Center Turn Lane for Hurricane Evacuation
- Interchange
- Roundabout
- County Boundaries

0 1 2
Scale in Miles

Project Area, Action Area, and Preferred Alternative

Figure 1

Specific characteristics of the action area are:

- On land the project's proposed right-of-way and permanent and temporary easement plus 500 feet.
- The proposed Mid-Currituck Bridge plus 0.5 mile north and south of the bridge rail (approximately 1 mile total). This includes Currituck Sound directly below the bridge corridor, as well as a location on either side of the bridge that encompasses the area potentially affected by construction activities and stormwater runoff. Also on land, the shoreline that drains into the sound at the termini of the proposed Mid-Currituck Bridge. The shoreline component encompasses the area of the sound that could receive runoff from developed areas along the shoreline.

Only two portions of the action area include protected species habitat; Currituck Sound, which would be bridged, and the dune line and beach between the northern end of NC 12 and the Virginia line, where indirect effects could occur. Only the latter contains rufa red knot habitat. More details on the action area can be found in the 2011 BA.

3.0 Environmental Baseline

The environmental baseline used in this assessment refers to conditions based on the assumption that the proposed project would not be built, or the No-Build Alternative. The environmental baseline, which reflected the potential for coastal change, presented in the 2011 BA remains applicable with the addition in the next paragraph

Oceanfront coastline/beach habitat is the only habitat used by the rufa red knot in the action area. This species uses beaches for resting and feeding and can be affected by food availability and disturbances. Approximately 10 miles of beach between Corolla and the Virginia/North Carolina line are accessible for off-road vehicle use. Most (approximately 76 percent) of the drivable beach in this area is currently designated as eroding (NCDPCM, 2014), and all ocean shoreline between Corolla and the vicinity of the Outer Banks bridge landing is designated as eroding, with some areas over 8 feet per year (NCDPCM, 2014). Eroding shorelines often exhibit narrower and steeper beaches compared to accreting beaches. Narrow beaches used by people increase the potential for disturbance to resting and feeding shorebirds, including the rufa red knot. Narrow, steep beaches often exhibit less intertidal resources for feeding birds compared to wide, gently sloping shorelines.

4.0 Action Descriptions

4.1 Proposed Action

The construction, operation, and maintenance of the Preferred Alternative would occur on the mainland, in Currituck Sound, and the western shore of the Outer Banks. The

rufa red knot is found on the oceanfront coastline/beach and therefore the Preferred Alternative would not directly affect the rufa red knot or its habitat.

4.2 Indirect Effects

Indirect effects are caused by actions taken because of the presence of the project and occur later in time, or are farther removed in distance, but are still reasonably foreseeable. Actions caused by the presence of the Preferred Alternative documented in the FEIS that could result in indirect effects include:

1. A change in the order in which available lots on the NC 12-accessible Outer Banks would develop.
2. Approximately 68 acres of business development likely would occur using land near the US 158/Mid-Currituck Bridge interchange immediately north of Aydlett Road.
3. Day visitor potential demand would increase, which could have some effect in the NC 12 area, but likely would have more impact in the unregulated beach-driving area north of the end of NC 12 to the Virginia line.

It is the third action that would affect rufa red knot habitat.

Within the action area, development has already occurred or is occurring at this time without the presence of the bridge. Thus, development in the action area is not directly dependent on the construction of the Preferred Alternative. Currituck County has placed no restrictions on development contingent upon the completion of the Preferred Alternative. The Mid-Currituck Bridge project is intended to improve traffic flow on the larger project area's thoroughfares (US 158 and NC 12) and reduce travel time for persons traveling between the Currituck County mainland and the Currituck County Outer Banks. The improved accessibility to the Currituck County Outer Banks gained with the bridge would cause the order of future development in the larger project area to change such that development occurs first in Currituck County and later in Dare County. However, the extent and character of existing and planned development on the Outer Banks and the mainland by 2035 would be the same (except at the mainland bridge terminus) with or without the bridge project. Most of the Outer Banks is already subdivided into lots. The presence of the bridge could result in business development on uplands in proximity to US 158 at the project's terminus on the mainland.

Future development between the end of NC 12 and the Virginia line would contribute to increased beach driving in habitat or potential habitat for the rufa red knot. Although driving on the beach is an existing activity, the increase in beach driving has the potential to further degrade beach habitats and/or disturb rufa red knot. All beaches that could be affected by increased beach driving are currently open for vehicle use, and are used between the foreshore and the dune line whether for driving or parking. The

current and ongoing beach driving already occur at levels and frequencies that are disruptive and/or degrade beach habitats in the areas open to beach driving.

4.3 Interrelated and Interdependent Actions

USFWS defines an interrelated action as an activity that is part of a proposed action and depends on a proposed action for its justification (USFWS and NMFS, 1998).

Interdependent actions are those actions having no independent utility apart from the proposed action (USFWS and NMFS, 1998).

There are no interrelated actions or activities associated with the Preferred Alternative. Operation and maintenance activities associated with the completed project are considered a part of the project and are assessed as a part of direct effects. The Preferred Alternative is not a part of a larger project. There are no directly interdependent actions or activities associated with the Preferred Alternative. There are no specific actions or activities that could not occur without the completion of the Preferred Alternative except for a potential constraint on planned future development that could occur with the No-Build Alternative. However, development has already occurred and at this time continues to occur in the action area.

4.4 Other Activities Associated with Cumulative Effects

Cumulative effects are those effects of future state or private activities, not involving federal activities, which are reasonably certain to occur within the action area of the federal action subject to consultation.

Cumulative effects associated with the Preferred Alternative were documented in the 2012 FEIS and *Indirect and Cumulative Effects (ICE) Technical Report* (Parsons Brinckerhoff, 2011). The primary other reasonably foreseeable actions or trends in the project area that could contribute to cumulative effects to the rufa red knot is the potential indirect action of changes in beach driving. Additional consideration of cumulative effects related to beach driving was made following the distribution of the FEIS and will be published in association with a Record of Decision for this project, but is taken into consideration here.

5.0 Rufa Red Knot (*Calidris canutus rufa*) Characteristics



Photo credit: Dick Daniels from www.carolinabirds.org

The red knot (*Calidris canutus*) is a robin-sized shorebird that reaches 9 inches in length with a 20-inch wingspan (USFWS 2013). The rufa red knot (*Calidris canutus rufa*) is one of the six recognized subspecies of red knots, and is the only subspecies that travels along the Atlantic coast of the United States during spring and fall migrations. Since the 1980s, the rufa red knot population has decreased by nearly 75 percent in some areas. On September 30, 2013, the rufa red knot was proposed by the US Fish and Wildlife Service (USFWS 2013) to be listed as a “threatened” species. On September 30, 2013, the US Fish and Wildlife Service released a proposal to list the rufa red knot as a threatened species under the Endangered Species Act and the final rule was published in the Federal Register on December 11, 2014 (Volume 79, No. 238) effective date January 10, 2015. The rufa red knot species was not fully evaluated in the 2011 BA, but is assessed in this technical memorandum. The following sections describe characteristics of the rufa red knot, including the affected environment, species biology, current status, and critical habitat.

5.1 Affected Environment

The rufa red knot uses a variety of marine habitats, especially those associated with inlets, including sandy beaches, tidal flats, mouths of bays and estuaries, peat banks, and occasionally rocky substrates. During the northward migration, red knots prefer to stop to refuel at sandy coastal habitats where they often feed on clams, crustaceans, and especially horseshoe crabs eggs (Baker et al. 2013). The timing of the sites corresponds with the spawning seasons of intertidal macroinvertebrates. Rufa red knots tend to use the same traditional staging and stopover sites every year (Baker et al. 2013). The suitable habitats and affected environment for the rufa red knot are similar to those discussed for the piping plover in the 2011 BA, but rufa red knots are less likely than piping plovers to be found away from inlets and the ocean.

5.2 Species Biology

The rufa red knot has short, thick greenish to dark yellow legs and a short, straight bill. During the non-breeding season, adults are gray all over, with a lighter gray plumage on the face and breast. Breeding season plumage changes to a reddish-brown on the face and breast and mottled gray and black on the top of the head, neck, and back. Male and females look similar. Juveniles are all gray and have white tips on their wings (Baker et al. 2013, NAS 2014). Based on three banded birds, it is believed the maximum life span of the rufa red knot is 19 years (Baker et al. 2013).

Rufa red knots travel north in flocks of hundreds of birds from South America, the Caribbean, and Florida around March to their breeding grounds in the Canadian Arctic and head south in mid-July through late August. These long migration routes require staging or stopover sites along the way for resting and feeding. The timing of the sites corresponds with the spawning seasons of intertidal macroinvertebrates. During their migration, red knots feed on more easily digestible food such as horseshoe crab eggs, juvenile mussels, and clams in order to gain enough weight and energy to continue on their journey (USFWS 2013). Dey et al. (2011) found a significant positive relation between the body mass of red knots and the egg mass of horseshoe crab eggs.

Rufa red knots tend to use the same traditional staging and stopover sites every year. Important staging sites for northbound migration include Patagonia, Argentina; eastern and northern Brazil; the southeastern United States, the Virginia barrier islands, and Delaware Bay. For southbound migration, important stopover areas include Hudson Bay, James Bay, St. Lawrence River, Mingan Archipelago and Bay of Fundy in Canada, Massachusetts and the New Jersey coast, Altamaha River in Georgia, the Caribbean, and the northern coast of South America (USFWS 2014). Northbound rufa red knots typically pass through the North Carolina coast around May and account for the peak numbers of rufa red knots for the year. Southbound knots are seen from late July through early September. Some red knots do not migrate throughout their entire range and can be seen along the Atlantic coast, including areas along the coast of North Carolina, throughout the year (Baker et al. 2013, Dinsmore et al. 1998).

5.3 Current Status

Overharvesting of horseshoe crabs along the Mid-Atlantic coast, especially in Delaware Bay, in the 1980s and 1990s has led to a drastic population decline for the rufa red knot over the past 30 years. Delaware Bay is among the most crucial staging areas for the rufa red knot, and there are substantial efforts underway to protect horseshoe crabs in this region to protect and promote crab and shorebird recovery. However other threats, such as human development, also threaten habitat and available food sources for the rufa red knot (Baker et al. 2013). USFWS proposed to list the rufa red knot as threatened under the Endangered Species Act on September 30, 2013, with a 60-day public comment period lasting until November 29, 2013 and three public hearings. The public comment period was reopened April 3, 2014 and was scheduled to end May 19, 2014, but it was extended

until June 15, 2014, and an additional public hearing was held on June 5, 2014 at the Alligator River National Wildlife Refuge Visitor Center in Manteo, North Carolina (FWS 2014). The Service received more than 17,400 comments on the threatened listing proposal, many of which were supportive form letters, while others raised issues with the adequacy of horseshoe crab management, the impacts of wind turbines, the inclusion of interior states in the range, and other topics. The agency requested additional time to complete the final decision in order to thoroughly analyze complex information available after the proposal, such as national and global climate assessments and carefully consider and address extensive public comments. On December 11, 2014, the rufa red knot was ruled as a threatened species, effective January 10, 2015. Critical habitat for the rufa red knot has not yet been determined.

A study of seasonal numbers and distribution of shorebirds at eight sites along the Atlantic coast and Gulf coast in Florida ranked North Carolina's Outer Banks last in regional importance to the rufa red knot (Dinsmore et al.1998). Of the rufa red knots documented during the study, most were seen on the North Core Banks and Ocracoke Island. This study also showed rufa red knots present in every month of the year along the Outer Banks. The highest numbers of individuals were recorded in May and June and the lowest numbers were from January through March, with higher numbers in the spring than in fall (Dinsmore et al. 1998). In an annual count conducted in May of each year from 2006-2010 from Florida to Delaware Bay, rufa red knot numbers in North Carolina increased from 2006-2009 but then decreased in 2010. No other state in the survey showed the same trend, but five of the other seven states surveyed showed a decrease in numbers from 2009 to 2010 (Dey et al. 2011).

As of 2000, reports of larger flocks (greater than 100) have been rare along North Carolina's coast and Portsmouth and Ocracoke islands are more reliable locations for observations (Carolina Bird Club, 2014,<https://www.carolinabirdclub.org/ncbirds/saccounts.php>, accessed on 1 July 2014). Small flocks of wintering birds may be found along the entire coast of North Carolina, but are more likely south of Cape Hatteras.

Although there are many and regular records of red knot from Dare County, which is heavily visited by bird watchers; there are only a few scattered records of red knot sightings from Currituck County (e-bird Web site accessed 22 March 2015). Although e-bird lists five records from Currituck County from the months of May, July, October, and November, it is anticipated that small flocks could occur throughout the year, but the species is more common and regular along Dare County beaches. E-bird does list one sighting (November 2006) from the Currituck Heritage Park in Currituck, which is located along the eastern shore of Currituck Sound (e-bird Web site accessed March 2015). There are habitats (maintained yard and rocky break-wall) present at Currituck Heritage Park that are not present along the shoreline of the Preferred Alternative area.

An unpublished study (Watts 2015) comparing the distribution and density of red knots and people along the coast of NC found:

- Less than 6 percent of all North Carolina red knots surveyed in May 2011 and 2012 were in Currituck County;
- Within Currituck County, red knot density was 1.4 birds per kilometer (2.3 birds per mile) over 32.0 kilometers (19.9 miles) of private beaches (8.4 people per kilometer or 13.5 people per mile) and 5.0 birds per kilometer (8.0 birds per mile) over 4.5 kilometers (2.8 miles) on Currituck National Wildlife Refuge (CNWR) (2.3 people per kilometer or 3.7 people per mile).

5.4 Critical Habitat

No critical habitat for the rufa red knot has been designated in the action area.

6.0 Potential Exposure and Effects

This section addresses the relation of the Preferred Alternative to rufa red knot habitat in the action area and the associated exposure categories and activities. This section also includes an evaluation of the direct, indirect, interrelated and interdependent, and cumulative effects of the Preferred Alternative on the rufa red knot that would result from exposure to project activities.

6.1 Relation of Project to Action Area Habitat

Rufa red knot foraging and resting habitat occurs along the ocean-front beach and shoreline. Currituck Sound does not provide regular suitable habitat for red knot, but during certain wind conditions, the shoreline may be suitable for foraging by some species of shorebirds. The red knot is not known to use or expected to use the shores of the Currituck Sound and because the shorelines crossed by the Preferred Alternative are eroding, the Currituck Sound shoreline is not considered rufa red knot habitat within the action area. No habitat would be affected by road widening on the Outer Banks or any activity on the mainland.

6.2 Exposure Categories and Their Activities

In order to determine the effects of the project on rufa red knot, the proposed action, as well as interrelated, independent, and other cumulative actions, were divided into the exposure categories shown in Table 1. The exposure categories shown are similar to those presented in Table 4 of the 2011 BA; however, not all project exposure categories apply to rufa red knot habitat. Both temporary and permanent exposures were considered.

Table 1. Effects and Type of Exposure

Effect or Factor	Result
Occurrence of Species	Within the action area, rufa red knot foraging and resting habitat occurs along the ocean-front beach and shoreline and non-breeding birds can be present in small numbers throughout the year.
Direct Effects and Response	
• Construction Effects and Response	No exposure or effect
• Operations Effects and Responses	No exposure or effect
Interrelated and Interdependent Actions Effects and Response	No interrelated and interdependent actions
Indirect Effects and Responses	Potential further habitat degradation and/or disturbance from increased beach driving
Cumulative Effects and Responses	Same as indirect effects and responses

6.3 Effects

In this section, the Preferred Alternative is evaluated for direct, indirect, interrelated and interdependent, and cumulative effects on the rufa red knot.

6.3.1 Direct Effects

No potential resting and/or foraging habitat would be lost or affected by construction, operation, and maintenance of the Preferred Alternative. Therefore, the Preferred Alternative would not directly affect the rufa red knot or its habitat.

6.3.2 Indirect Effects

As stated in Section 4.2, with the Preferred Alternative day visitor potential demand would increase, which would affect the unregulated beach-driving area north of the end of NC 12 to the Virginia line, an area that contains red rufa habitat. Increased beach driving could result in indirect effects caused by the following:

- Changes to ecological systems resulting in altered predator/prey relationships;
- Changes to ecological systems resulting in long-term habitat alteration; and

- Anticipated changes in human activities, including changes in land use.

The rufa red knot may currently encounter an occasional predator in its beach habitat. An increase in beach driving may re-enforce avoidance of these traffic areas by both the rufa red knot and any predators. An altered predator-prey relationship is not expected to occur as a result of avoidance of higher traffic areas.

Driving on the approximate 10 miles of beach that is between the end of NC 12 in Corolla and the Virginia line has caused degradation of existing habitat on this stretch of beach. If the Preferred Alternative was implemented, there is a reasonable expectation of induced beach driving if it remains unregulated, which would increase this activity. To date Currituck County actions taken to regulate beach driving have been confined to regulating commercial ventures that involve beach driving. Vendors are no longer permitted to rent four-wheel drive vehicles to visitors in Currituck County for use on the beach. Group trips are regulated annually. Each year the county monitors the number of visitors and gives operational permits to tour companies. The county limits outdoor tour operator licenses to 10. Each license holder can operate a maximum of five vehicles, with a maximum capacity of 15 persons. No action has been taken to regulate beach driving in personal vehicles (personal communication, Ben Woody, Planning Director, Currituck County Planning Department, February 12, 2015).

CNWR resides within the approximate 10-mile area of beach that could have increased traffic day visitor with the implementation of the Preferred Alternative. CNWR manager Mike Hoff indicated that rufa red knot are occasionally sighted throughout the year in small numbers along the beach where disturbances from four-wheel drive traffic can occur (personal communication, Mike Hoff, CNWR Manager, USFWS, January 26, 27 and March 23, 2015).

Therefore, the Preferred Alternative may indirectly affect the rufa red knot because there is a reasonable expectation of induced beach driving if beach use by private vehicles remains unregulated. Increased beach traffic and disturbances could be a source of increased effects to foraging and resting rufa red knot. However, the potential increase in beach driving would not likely create a new form of impact to the rufa red knot. No expansion of the area used for beach driving would occur in the action area as a result of the Preferred Alternative because all beaches that could be affected by increased beach driving are currently open for vehicle use, and are used between the foreshore and the dune line whether for driving or parking. Further, current beach driving volumes are already considered notable, as opposed to minor, by those concerned with the impact of beach driving. Any changes to effects as a result of the project would be discountable because of the inability to meaningfully measure, detect, or evaluate the change in effects from current beach driving.

6.3.3 Interrelated and Interdependent Effects

As indicated in Section 4.3, there are no interrelated or interdependent actions associated with the Preferred Alternative.

6.3.4 Cumulative Effects

As indicated above, the Preferred Alternative would have no direct effects on the rufa red knot or its habitat. There are no interrelated or interdependent actions associated with the Preferred Alternative. The primary reasonably foreseeable actions or trends in the project area that could contribute to cumulative effects to the rufa red knot are potential changes in beach driving, which are considered in Section 6.3.2.

6.3.5 Conservation Measures

The only potential impacts are related to indirect effects and occur on the beach and the only relevant potential conservation measures are related to beach driving and disturbances. NCTA has no authority to implement regulations concerning beach driving. Currituck County has the legal authority to regulate and manage driving on its beaches and is doing so with commercial vendors.

7.0 Conclusions

The protected species effects conclusion for the rufa red knot (*Calidris canutus rufa*) is “May Affect, Not Likely to Adversely Affect.” The project may indirectly affect the red knot because there is a reasonable expectation of induced beach driving if beach use by private vehicles remains unregulated. Increased beach traffic and disturbances could be a source of increased impacts to foraging and resting rufa red knot. However, the potential increase in beach driving would not likely create a new form of impact to the rufa red knot. It is unlikely that increased traffic would adversely affect rufa red knot because the potential increases in beach driving would not create a new form of impact for the rufa red knot, no additional areas subject to beach traffic would result, and current beach driving volumes are already considered notable, as opposed to minor, by those concerned with the impact of beach driving.

Under the PBO for the NLEB (*Myotis septentrionalis*) for the entire NCDOT program in Divisions 1-8, the programmatic determination for the NLEB is “May Affect, Likely to Adversely Affect.” This determination applies to the Mid-Currituck Bridge Project. The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Currituck County where the Mid-Currituck Bridge Project, is located.

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8.3 Personal Communications

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Woody, Ben, Planning Director, Currituck County, Planning Department, February 12, 2015.

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