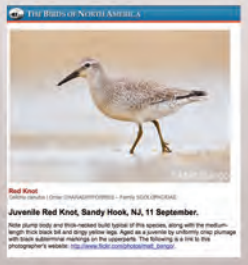
U.S. Fish and Wildlife Service

Meet the Rufa Red Knot

the largest peep in North America.



The rufa red knot, ***Calidris canutus rufa***, is the largest of the "peeps" in North America, and in the genus Calidris, exceeded in size only by the Great Knot (***C. tenuirostris***).

It is short-billed and long-winged, with wingspans reaching 20 inches. We could say it looks like a large version of sandpipers, those little birds you see, running back and forth, picking or probing for tiny prey in the wet sand left by receding waves.

To recognize the red knot from familiar species, we must pay attention to how they look as they mature. The rufa red knot undergoes a series of plumage changes from juvenile to adult: Rusty-red in breeding plumage, changing to dull gray dorsally and white ventrally in Basic (winter) plumage, with few distinct markings. In this photo we can appreciate a combination of age classes.

Can you guess how old these knots are?

Look at the striking pattern of the two adults in the foreground. These are mature breeding birds. The two birds you see to the right, with light colors could be non-breeding adults or juveniles. It is hard to identify the age when they are not showing off their red colors.

Juveniles tend to have dull yellow-olive legs and adults have darker legs. Also the plumage on the flanks of adults is whitish with dark barring. In this picture, we can not see the legs so there is no sure way of knowing the ages of these two individuals.

Photo of red knots at Cape Lookout, by Britt Brown courtesy of NPS

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Migration Miracle: The Long-Distance Flier, Rufa Red Knot

A PERILOUS JOURNEY

The red knot faces threats across the Western Hemisphere. Many are driven by climate change, which is raising sea levels, increasing storms and changing food and habitat availability. Additional threats include development, human disturbance, predation and hunting, among others.

Arctic

PREDATION

Arctic predators turn to red knot eggs and chicks when other prey isn't available. When this happens, most chicks do not survive. This pressure may increase with climate change.

2,700 miles

2,000 miles

HABITAT LOSS & DISTURBANCE

In the U.S. and abroad, coastal areas continue to be lost to sea level rise, shoreline projects and development. Human disturbance can keep the red knot from effectively preparing for its long journey.

1,200 miles

Delaware Bay

3,500 miles

Texas

1,300 miles

FOOD

Along their range, red knots feed on small clams and mussels. In Delaware Bay, they rely on horseshoe crab eggs. Red knot declines in the 2000s are linked to commercial crab harvest. With a scientific management framework now in place, harvest is no longer a threat. However, other threats to their food supplies are emerging.

HUNTING

Shorebird hunting in the Caribbean and South America may contribute to red knot declines.

Brazil

LONG-DISTANCE FLIER

The red knot B95, named for his leg band number, has been nicknamed "Moonbird," as researchers calculate this long-lived bird has flown enough miles to journey to the moon and at least halfway back.

4,250 miles

OIL SPILLS

Oil-related activities occur from Argentina to Canada, and depending on location, size and timing, a spill could kill red knots or affect migration. An event in key areas (Tierra del Fuego, Patagonia, the Gulf of Mexico, Delaware Bay and the Gulf of St. Lawrence) would be particularly problematic.

Tierra del Fuego

Created by Debra Reynolds, USFWS; Photos courtesy of USFWS, NASA and Brad Winn, Manomet Center for Conservation Sciences

Each year, Red Knots migrate up to 9,300 miles during their migration from South America to their breeding grounds in the Arctic Circle. Along the way, they stop at beaches of the East Coast to fuel for their remaining journey. Every spring, they migrate north and repeat the trip in reverse every autumn, making this bird one of the longest-distance migrants in the animal kingdom. Surveys of wintering knots along the coasts of southern Chile and Argentina and during spring migration in Delaware Bay on the U.S. coast indicate that a serious population decline occurred in the 2000s.

The knot's unique life history depends on suitable habitat, food and weather conditions at far-flung sites across the Western Hemisphere, from the extreme south of Tierra del Fuego to the far north of the central Canadian Arctic. Knots need to encounter these favorable habitat, food and weather conditions within narrow seasonal windows as the birds hopscotch along migration stopovers between wintering and breeding areas.

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Report banded birds

Red Knot (Calidris canutus rufa) at Mispillion Harbor, Delaware, Photo credit: Greg Breese/USFWS

An international team of scientists has banded tens of thousands of shorebirds since the mid 1990s. The vast majority of these birds are red knots, semipalmated sandpipers, ruddy turnstones, and sanderlings. Color-marking these birds has resulted in a growing database of sightings along the Atlantic Flyway describing their migration routes, nesting and wintering areas. Your observations will contribute greatly to this important information.

Flag colors and inscriptions:

	Pre-2003	2003	2004	2007
Canada		AB		
USA		AB	ABC	1AC
Brazil		AB		
Argentina		AB		
Chile		AB		

Under the Pan American Shorebird Program (PASP), researchers use one (or two) specific flag color(s) to indicate the country in which a shorebird was marked. Here are some examples. / Courtesy of PASP

Source: retrieved on 05/02/2014; http://www.whsm.org/

Scan this code with your smart phone or android devise to visit Ebird.org. Use the site to report bird sightings.

Red knot banded in the US with a yellow radio transmitter..

Thanks to his unique marker, researchers have been able to keep track of this male Red Knot, better known as the 17-year-old shorebird superstar "B-95," since 1995. / © Jan van de Kam

Scan this code with your smart phone or android to visit Bandedbirds.org. Use this site to report shorebirds with colored bands/lettered flags.

LSerrano

Behavior

Red knots at Cape Lookout by Britt Brown, courtesy of NPS

Red knots in flight by USFWS, Northeast Region

A dozen rufa red knots stand alert and ready to spring into flight. This picture was taken at a marsh bed at Cape Lookout National Seashore. Watch carefully and you'll see their eyes fixed on the camera. They are probably suspicious of the photographer approaches from a vessel. We see here a combination of age classes but mostly breeding adults, identifiable by the rusty red plumage that gives the species its name.

Locomotion

The red knot often walks rather than runs. Speeds are not determined, but when foraging, it moves steady and methodically compared to other sandpipers. The red knot is sometimes described as "grazing." Occasionally, individuals run between small, clumped food patches, or run to follow a receding wave or advancing tide line while hunting invertebrates at the tide edge. Like other shorebirds, it often stands on one leg, especially when roosting, and can move around when standing on one leg by hopping, usually in a roosting flock. The knot is also capable of climbing fairly steep hills on the nesting grounds.

Mating

This is a monogamous species that lays a single brood of about 4 eggs every year. Courtship is accompanied by elaborate flight, ground, and vocal displays. For nesting, this knot prefers drier tundra and sparsely vegetated gravel ridges.

Flight

The Red knot may run to take off from open areas, but it is perfectly capable of springing directly into flight, for instance when leaving roost, when startled or on approach of predators. Once airborne, they are generally powerful and swift fliers, characteristically in tight flocks consisting of tens to hundreds or sometimes low thousands of individuals. It may also fly in lines or in "V" formation on migration or when commuting between foraging and/or roosting areas.

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What do red knots eat in North Carolina?

Red knots at Cape Lookout by Britt Brown, courtesy of NPS

Coquina Clams

Photo by Florida Wildlife via Flickr. June 23, 2010

Look where the person is standing: right where the waves come in and out. That's where to find coquina clams and mole crabs. Coquina clams can be found from Virginia to Florida, and as far west as Texas. Coquina are a common species on most North Carolina beaches and represent an important food source for shorebirds and other beach-dwelling animals.

Mole Crab

Photo by Florida Wildlife

Mole crabs, commonly called sand fleas, thrive on most beaches where the waves wash in and out, burying themselves in the wet sand. They feed on plankton and detritus.

Looking for food in the mudflat

The juvenile in foreground of this picture is making its way across a mudflat foraging for food. In middle ground we see a breeding adult as it takes off in flight

Food sources and nutrition

Red Knots are principally marine shorebirds in the non-breeding season, when they eat small clams, mussels, snails and other invertebrates, swallowing their prey whole – shell and all - and crushing it in their muscular gizzard. During spring migration, however, large flocks gorge on the eggs of horseshoe crabs (*Limulus*) that come ashore to spawn in late May at the penultimate stopover site in Delaware Bay – along the mid-Atlantic coast of the USA.

In order to endure their long journeys, red knots undergo extensive physical changes. Flight muscles enlarge, while leg muscles shrink. Stomachs and gizzards decrease, while fat mass increases by more than 50 percent. Due to these physical changes, knots arriving from long migration flights are not able to feed maximally until their digestive systems regenerate, a process that may take several days. Thus, migrating birds require stopover habitats rich in easily digested foods – with thin or no shells – in order to gain enough weight to fuel the next flight. In spring, migrating knots seem to follow a northward "wave" in quality prey – by timing their stopovers with the spawning seasons of intertidal invertebrates, knots take advantage of readily digestible food resources .

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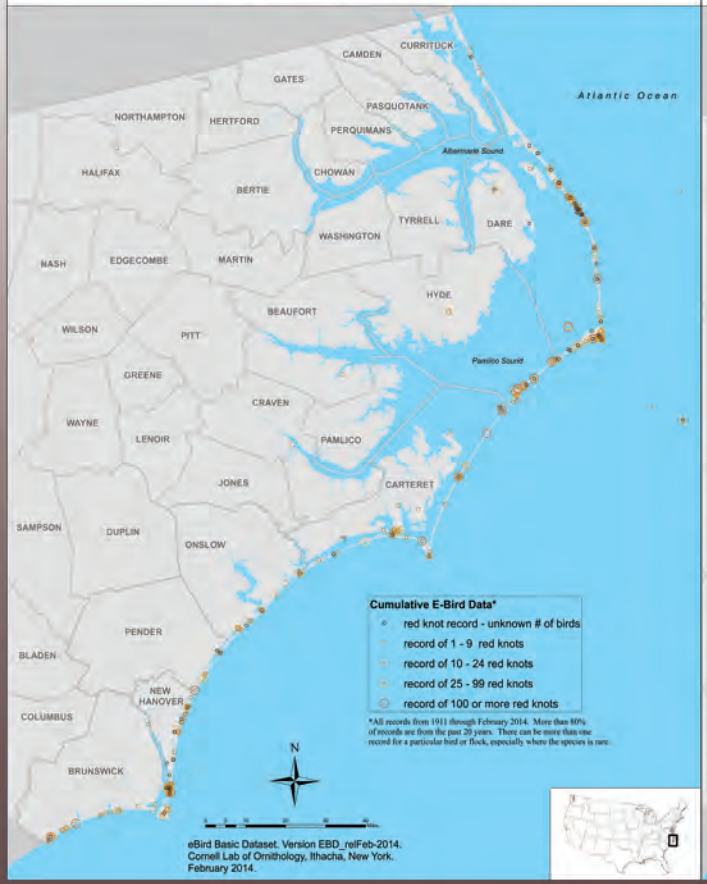
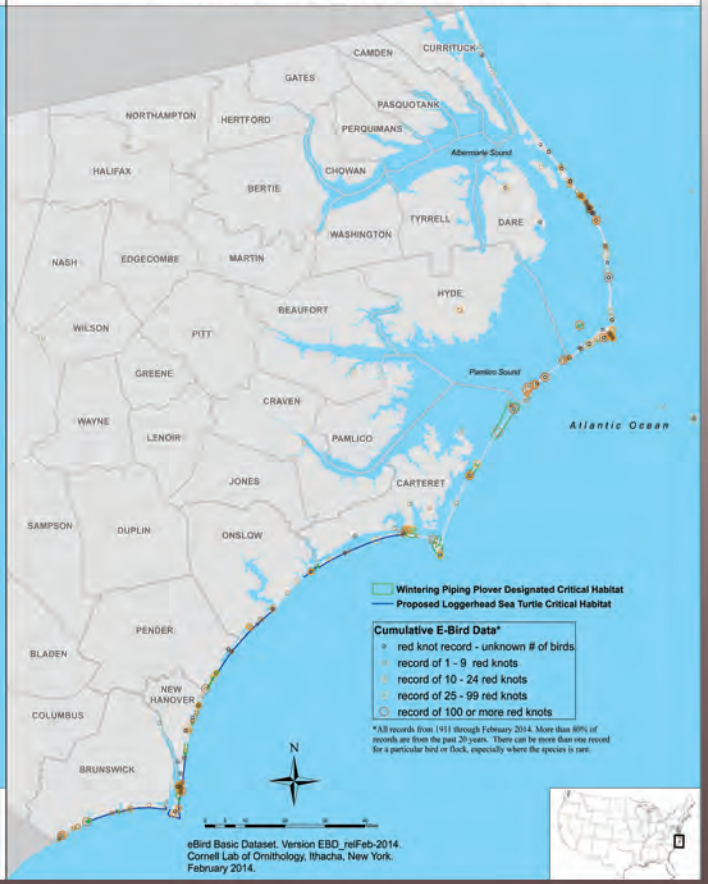
The rufa red knot range in NC coincides with some areas alredy protected for other species

North Carolina Range of the Rufa Red Knot



North Carolina Range of the Rufa Red Knot with Proposed Loggerhead Sea Turtle Critical Habitat & Wintering Piping Plover Designated Critical Habitat