Common Name: RED KNOT

Scientific Name: *Calidris canutus* Linnaeus

Other Commonly Used Names: Red sandpiper, red-breasted sandpiper, red-breasted plover, beach robin, Canute's sandpiper, silver plover

Previously Used Names: *Tringa canutus*

Family: Scolopacidae

Rarity Ranks: G4/S3

State Legal Status: Rare

Federal Legal Status: Not listed

Federal Wetland Status: N/A

Description: This bird is a medium-sized shorebird about 23-25 cm (9-10 in) long and weighing about 135 g. In breeding plumage it is easily distinguished from all other sandpipers seen in the state with a brick red to reddish-orange head, neck, breast, and abdomen and medium gray back

with some reddish color mixed in. The black bill is straight with a relatively stout base that tapers to a relative fine tip. Legs are usually dark gray to black, but can be greenish in color in some adults in nonbreeding plumage as well as in some juvenile birds. Wings are medium to dark gray on top with some white at the base of the primary and secondary feathers that forms a thin white stripe from the shoulder to the tip. The undersides of the wings are light to medium gray with darker gray tips. The reddish-orange color on the head, neck, and upper breast is replaced by gray on adults in nonbreeding plumage. The reddish-orange of the lower breast and abdomen is replace by white with dark gray barring on the flanks. A thin white stripe can be seen above the eye of adults. This stripe is broader and more defined in juvenile birds. Feathers on the backs of juveniles have a scaly pattern due to black and white edges that contrast with the gray feathers.

Similar Species: Long-billed dowitchers (*Limnodromus scolopaceus*) and short-billed dowitchers (*Limnodromus griseus*) look similar in nonbreeding plumage, but both species have very long bills and usually slightly darker plumage on their upperparts. The short-billed dowitcher can also look similar to the red knot in breeding plumage, but its longer neck and legs, smaller head, and very long bill easily separate it from the knot. Dunlin (*Calidris alpina*) in nonbreeding plumage can also look similar to the red knot, but it is significantly smaller with a slightly down-curved bill.

Habitat: In the Western Hemisphere the red knot breeds in the mid to high arctic tundra of Alaska, Canada, and Greenland. Most breeding habitats are near coastal areas, often on islands. Nest sites are generally on dry, sunny, and slightly elevated areas of tundra, frequently on open gravel ridges or slopes. During migration this species switches to coastal beaches usually at or near the mouth of bays, estuaries, or tidal inlets. Staging sites are associated with high wave-energy coastal areas. Wintering sites are generally intertidal habitats such as beaches with significant wave action or currents.

Diet: Terrestrial invertebrates and their larvae on the breeding grounds. During migration and winter bivalves, small snails, and crustaceans are eaten. In Georgia, small clams including coquina (*Donax spp*.) and dwarf surf (*Mulinia lateralis*) are an important part of their fall and winter diet, while horseshoe crab eggs are consumed heavily during spring staging along our coast.

Life History: The breeding season on the red knot's arctic nesting grounds normally begins in early June. Upon arrival snow-free areas are sought for nest sites. Males are thought to arrive first with females arriving a day or two later. Pairing can occur within hours of the arrival of females, but often does not occur for one or two days. The male uses a few simple courtship displays to entice the female including a "nest scrape" display at scrapes he has made in the vegetation prior to the female's arrival. He makes these scrapes by removing vegetation with his bill and using his body and feet to form the depressions. The nest is a cup-shaped depression that is often lined with dried leaves, grasses, and occasionally lichens. Most often four eggs are laid and incubated by both parents for 21-23 days. Hatching is synchronous and the young birds are precocious, leaving the nest almost immediately. Families quickly move away from the nest site to wetland habitats. Usually only the male stays with the brood once it leaves the nest. Adults will feign injury when a predator approaches a nest or small young. The male will defend larger young by directly attacking and chasing predators such as jaegers. While parental care by the

female typically ends at hatching, the male will stay with the brood for about two weeks after hatching. Only one brood is reared per breeding season. Some birds that breed in Canada winter along the Southeast Atlantic Coast, including Georgia; while others (the subspecies *Calidris canutus rufa*) travel as far south as Tierra del Fuego, a journey of over 15,000 km (9400 mi) one way.

Survey Recommendations: Pedestrian surveys of suitable beach habitats to determine numbers, locations used, and identify and collect data from banded or marked birds. The annual mid-winter shorebird survey can provide this information for the entire Georgia coast during a narrow time period in late January or early February, but additional surveys on a more limited scale should be run throughout the spring, fall, and winter when red knots may be present on the coast. These surveys would allow us to more accurately determine spatial and temporal patterns of migrants as well as wintering birds. Georgia DNR flies a spring aerial survey during the last week of May in conjunction with other Atlantic Coast states to get a population estimate of migrating birds.

Range: The red knot breeds in central and eastern Russia, Alaska, Canada, and Greenland. Wintering areas vary by subspecies or breeding population and include western and southern Europe, India, Southeast Asia, the Philippines, parts of the west coast of Africa, Australia and New Zealand, and occasionally the Azores and Sri Lanka in the eastern Hemisphere and the U.S. Atlantic, Gulf, and Pacific Coasts, both coasts of Mexico, part of the east coast of Central America, the entire west coast of Central America, and much of both coasts of South America all the way to Tierra del Fuego in the Western Hemisphere.

Threats: Loss of food resources at stopover sites, particularly loss of horseshoe crab eggs at Delaware Bay due to excessive harvest of horseshoe crabs for bait by commercial fishermen and others. Habitat loss caused by seawalls, jetties, rip-rap and other beach armoring structures that alter and interfere with the natural dynamics of sand deposition thereby reducing feeding and roosting sites. Sea level rise caused by climate change could also result in significant habitat loss. Disturbance and harassment by people, pets, and vehicles on beaches that result in repeated flushing. Contaminated waters and food supplies including red tide events.

Georgia Conservation Status: Knots can be found on any Georgia barrier beach, but Little Tybee, Wassaw, St. Catherines, Blackbeard, Sapelo, Little St. Simons, and Cumberland Islands, as well as St. Catherines Island Bar are the locations most often used in the winter and spring, while Wolf Island, Little Egg Island Bar, and Little St. Simons Island at the mouth of the Altamaha River support the only known late summer and fall staging site on the east coast of the U.S., attracting as many as 12,000 knots at one time.

Conservation and Management Recommendations: The red knot was hunted extensively for food and sport in the late 1800s and early 1900s and populations were reduced to a small fraction of their former numbers. It is not know if populations ever fully recovered from these declines. Today concern revolves particularly around the *rufa* subspecies that appears to have declined precipitously over the last two decades. This bird migrates between Arctic Canada and Tierra del Fuego, using Delaware Bay and other areas on the U.S. Atlantic Coast as stopover sites where it refuels by feeding on horseshoe crab eggs. The fat it puts on is needed for this bird's long-

distance journey, which includes non-stop flights of over 2500 km (1560 mi). Significant increases in the harvest of horseshoe crabs for bait for the conch and eel fishery has greatly diminished the quantity of eggs available for the knots and may be contributing to the decline of this subspecies. Quotas that limit the harvest of horseshoe crabs may be necessary in Delaware Bay to restore the spawning population to levels that can adequately support the red knot population. Significantly reducing the use of beach armoring will allow natural sand accretion that provides foraging habitat. Habitat loss caused by sea level rise may be much more difficult to stop, but allowing natural sand deposition dynamics to operate along our coast may allow for the formation of suitable habitats as others are lost. Regulations are in place to prevent human disturbance of beach stopover and wintering habitats at some sites; however, many sites that knots use in the state are not protected by these laws. In some cases vehicular and pedestrian traffic can be intense and birds are repeatedly flushed, depleting critical fat reserves. In some instances beach traffic may result in the knots abandoning otherwise suitable sites. Hopefully, information and outreach efforts can be used to educate enough of the public about the plight of red knots and other shorebirds so that people will voluntarily avoid disturbing the birds. If these efforts are ineffective, laws and regulations may be needed to assure people comply.

Selected References:

Baker, A. J., P. M. Gonzalez, T. Piersma, L. J. Niles, I. L. S. Nascimento, P. W. Atkinson, N. A. Clark, C. D. T. Minton, M. Peck, and G. Asarts. 2004. Rapid population decline in Red Knots: Fitness consequenses of decreased refuelling rates and late arrival in Delaware Bay. Proceedings of the Royal Society, Series B, 271:875-882.

Bent, A. C. ed. 1927. Life Histories of North American Shore Birds, Part 1. U.S. National Museum Bulletin 142.

Brown, S., C. Hickey, B. Harrington, and R. Gill, eds. 2001. The United States Shorebird Conservation Plan. 2nd ed. Manomet Center for Conservation Science, Manomet, Mass.

Burleigh, T. D. 1958. Georgia Birds. University of Oklahoma Press, Norman. 746pp.

Castro, G. and J. P. Myers. 1993. Shorebird predation on eggs of horseshoe crabs during spring stopover on Delaware Bay. Auk 110:927-930.

Coolidge, H. W. 1972. Notes on shorebirds on Wassaw Island, Georgia. Oriole 37:37.

Davidson, N., and T. Piersma. 1992. The migration of knots: conservation needs and implications. Wader Study Group Bulletin (Supplement) 64:198-209.

Harrington, B. A., J. M. Hagan, and L. E. Leddy. 1988. Site fidelity and survival differences between two groups of New World Red Knots *Calidris canutus*. Auk 105:439-445.

Harrington, B. A. 1996. Flight of the Red Knot. W. W. Norton Company, New York.

Harrington, B. A. 2001. Red Knot (*Calidris canutus*). *In* A. Poole and F. Gill, eds., The Birds of North America, no. 563. The Birds of North America, Inc., Philadelphia, Pa.

Howe, M. A, P. H. Geissler, and B. A. Harrington. 1989. Population trends of North American shorebirds based on the International Shorebird Survey. Biological Conservation 49:185-200.

Morrison, R. I. G., R. K. Ross, and L. J. Niles. 2004. Declines in wintering populations of red knots in southern South America. Condor 106:60-70.

Smith, F. M., A. E. Duerr, B. J. Paxton and B. D. Watts. 2008. An investigation of stopover ecology of the Red Knot on the Virginia barrier islands. Center for Conservation Biology Technical Report Series, CCBTR-07-14. College of William and Mary, Williamsburg, Va. 35pp.

Tsipoura, N., and J. Burger. 1999. Shorebird diet during spring migration stopover on Delaware Bay. Condor 101:635-644.

Author of Species Account: Todd M. Schneider and Bradford Winn

Date Compiled or Updated:
T. Schneider and B. Winn, July 2010: original account
K. Owers, July 2010: updated status and ranks, added pictures

Breeding plumage