

## Migratory Shorebird Guild

<b>American Avocet</b> ( <i>Recurvirostra Americana</i> )	<b>Ruddy Turnstone</b> ( <i>Aenaria interpres</i> )
<b>American Golden Plover</b> ( <i>Pluvialis dominica</i> )	<b>Sanderling</b> ( <i>Calidris alba</i> )
<b>Baird's Sandpiper</b> ( <i>Calidris bairdii</i> )	<b>Semipalmated Plover</b> ( <i>Charadrius semipalmatus</i> )
<b>Black-bellied Plover</b> ( <i>Pluvialis squatarola</i> )	<b>Semipalmated Sandpiper</b> ( <i>Calidris pusilla</i> )
<b>Buff-breasted Sandpiper</b> ( <i>Tryngites subruficollis</i> )	<b>Short-billed Dowitcher</b> ( <i>Limnodromus griseus</i> )
<b>Dunlin</b> ( <i>Calidris alpina</i> )	<b>Solitary Sandpiper</b> ( <i>Tringa solitaria</i> )
<b>Greater Yellowlegs</b> ( <i>Tringa melanoleuca</i> )	<b>Spotted Sandpiper</b> ( <i>Actitis macularia</i> )
<b>Least Sandpiper</b> ( <i>Calidris minutilla</i> )	<b>Stilt Sandpiper</b> ( <i>Calidris himantopus</i> )
<b>Lesser Yellowlegs</b> ( <i>Tringa flavipes</i> )	<b>Upland Sandpiper</b> ( <i>Bartramia longicauda</i> )
<b>Long-billed Curlew</b> ( <i>Numenius americanus</i> )	<b>Western Sandpiper</b> ( <i>Calidris mauri</i> )
<b>Long-billed Dowitcher</b> ( <i>Limnodromus scolopaceus</i> )	<b>White-rumped Sandpiper</b> ( <i>Calidris fuscicollis</i> )
<b>Marbled Godwit</b> ( <i>Limosa fedoa</i> )	<b>Willet</b> ( <i>Catoptrophorus semipalmatus</i> )
<b>Pectoral Sandpiper</b> ( <i>Calidris melanotos</i> )	<b>Wilson's Snipe</b> ( <i>Gallinago gallinago delicata</i> )
<b>Piping Plover</b> ( <i>Charadrius melodus</i> )	<b>Wilson's Plover</b> ( <i>Charadrius wilsonia</i> )
<b>Purple Sandpiper</b> ( <i>Calidris maritima</i> )	<b>Wimbrel</b> ( <i>Numenius phaeopus</i> )
<b>Red Knot</b> ( <i>Calidris canutus</i> )	

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### DESCRIPTION

#### Taxonomy and Basic Description

The shorebird guild is composed of birds in the Charadrii suborder. Shorebirds in South Carolina represent 3 families: Scolopacidae (sandpipers), Charadriidae (plovers), and Recurvirostridae (avocets). American Oystercatchers are covered in a different species profile while Wilson's Snipe is covered here and in the Marsh Birds Guild.

Sandpipers are the most diverse family of shorebirds. Their tactile foraging strategy encompasses probing in soft

mud or sand for invertebrates. Plovers are medium-size birds, with relatively short, thick bills and employ a distinctive foraging strategy. They stand, looking for prey, and then run to feed on detected invertebrates. Avocets are large shorebirds with long recurved bills and partial webbing between the toes. They feed by employing both tactile and visual methods.



Photograph by Felicia Sanders



Spotted sandpiper photo by USFWS

Shorebirds are characterized by long legs for wading and wings designed for quick flight and transcontinental migrations. Migrations can span continents; for example, Red Knots migrate from the Canadian arctic to the southern tip of South America. Less frequently, shorebirds may migrate from the northeastern to Southeastern US, as is the case for the Piping Plover. Migratory shorebirds in South Carolina may be transient birds on a northbound flight in the spring, a

southbound flight in the fall, or wintering birds. Plumage can be strikingly different between summer and winter. Although nesting habitat includes inland tundra and prairies, during the non-breeding season, they forage and roost in mixed species flocks primarily on the coast. Thus, they are aptly named shorebirds. Willets and Wilson's Plovers nest in South Carolina and migrate south during the non-breeding season.

## Status

Although long-term monitoring is absent, surveys of migrant shorebirds in the last three decades indicate most shorebirds are in serious decline (Manomet 2012). Many shorebird species are in need of protection afforded by federal listing, but Piping Plovers are the only listed shorebird in South Carolina; this species is considered threatened both in the state and federally. The Red Knot has recently been proposed for listing as Threatened under the ESA. The US Shorebird Conservation Plan (<http://shorebirdplan.fws.gov>) combines 6 categories to classify the conservation status of declining shorebirds to prioritize conservation efforts. Classifications range from "highly imperiled" to "low concern" (USFWS 2004a, 2004b). For the purposes of the Plan, however, those in the "low concern" category are still considered a priority since the group as a whole faces the same basic threats. See Table 1 below for listings.

Table 1: Conservation status of high priority migratory shorebird species found in South Carolina (USFWS 2004a).

Highly Imperiled	High Concern	Moderate Concern	Lower Concern
Piping Plover	American Golden Plover	Black-bellied Plover	Semipalmated Plover
Long-billed Curlew	Whimbrel	American Avocet	Spotted Sandpiper
Red Knot	Marbled Godwit	Greater Yellowlegs	White-rumped Sandpiper
Buff-breasted Sandpiper	Ruddy Turnstone	Lesser Yellowlegs	Pectoral Sandpiper
	Sanderling	Dunlin	Long-billed Dowitcher
	Solitary Sandpiper	Semipalmated Sandpiper	Baird's Sandpiper
	Upland Sandpiper	Least Sandpiper	Wilson's Snipe
	Western Sandpiper	Purple Sandpiper	
	Short-billed Dowitcher	Stilt Sandpiper	
	Wilson's Plover	Willet	

## POPULATION SIZE AND DISTRIBUTION

Population sizes of most species are not known because shorebird migration can span continents and breeding grounds are mostly inaccessible arctic and sub-arctic habitats. Censuses at stopover areas are useful for estimating minimum population size. Most migrant species are present year-round but are less abundant during short arctic summers. Spring migration along the Atlantic Coast is from March to May while fall migration is from July to October (Helmers 1992). Peak shorebird counts occurred in late March from Cape Romain National Wildlife Refuge (CRNWR) to Dewees Inlet (the Cape Romain Region), while minimum counts were in late June (Dodd and Spinks 2001).



Whimbrel Photo by Ram Pappish/USFWS

In 1974, Manomet Center for Conservation Sciences (<http://www.manomet.org>) coordinated International Shorebird Surveys (ISS) to monitor shorebird numbers at important stopover sites. Presently, this program is the only statewide shorebird monitoring program in South Carolina. Eleven sites are, or have been, surveyed in South Carolina: Huntington Beach State Park, Yawkey Wildlife Center, Cape Romain NWR, Pitt Street Bridge, Folly Island, Kiawah Island, ACE Basin NWR, Bear Island Wildlife Management Area (WMA), Hunting Island State Park, Harbor Island, Savannah River Dredge Spoil Site, and Savannah River NWR. Surveys are conducted during fall and/or spring migrations by state and federal employees and volunteers. Data from these surveys are used to identify important areas to individual species, important habitat types, and population trends.

Surveys of the Cape Romain Region, in comparison with other ISS, indicate this region is the most important area in South Carolina for shorebirds (Sprunt and Chamberlain 1970; Marsh and Wilkinson 1991; Dodd and Spinks 2001). The Western Hemisphere Shorebird Reserve Network (<http://www.whsrn.org/>) identified essential migratory sites for the western hemisphere also using ISS data. The Network currently has 85 sites in 13 countries, from Alaska in the north to Tierra del Fuego in southern South America. Cape Romain NWR is one of only 10 sites identified on the Atlantic Coast of the US and is a site of “international” importance.



Willet photo by NPS

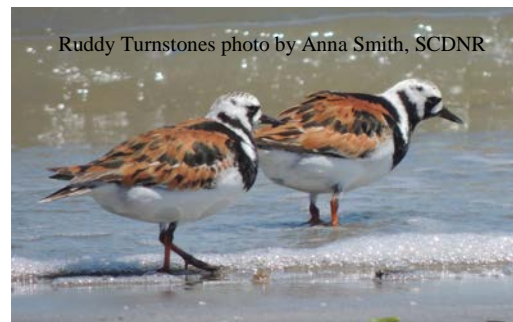
Piping Plovers nest in more southern latitudes. Piping Plovers nesting in the Great Lakes region are federally endangered with just over 60 pairs. The number of wintering piping plovers in South Carolina is approximately 100 individuals, although larger numbers are seen during spring and fall migration (USFWS 2009). The largest proportion of Plovers nesting in the Great Lakes appears to winter in South Carolina and Georgia, thus making South Carolina important for Piping Plovers. Sites in South Carolina with the highest concentrations are exposed to disturbance, thus management of these sites would benefit overwinter survival (USFWS 2009).



Piping Plover photo by NPS

Statewide surveys of Marbled Godwits are possible because they are uncommon yet distinctive shorebirds roosting together in a few sites in South Carolina. Statewide surveys by SCDNR in December 2002 counted 345 Marbled Godwits. Surveys in the Cape Romain Region in December 1988 were consistently over 500 birds (Marsh and Wilkinson 1991). These low numbers suggest this species is declining in South Carolina.

Wilson’s Plover is a medium-sized shorebird that nests in South Carolina on beaches, and occasionally on shell mounds as well as in dry areas of ponds and impoundments. Loss of beach nesting habitat threatens the present widespread distribution of this species in South Carolina. Surveys of breeding pairs throughout



Ruddy Turnstones photo by Anna Smith, SCDNR

the State during 2009-2011 suggest approximately 380 pairs nest in South Carolina.  
**HABITAT AND NATURAL COMMUNITY REQUIREMENTS**

Shorebirds roost and forage in coastal wetland habitats as well as inland. They feed on invertebrates found in mudflats, sparsely vegetated shallow water, and on beaches and oyster reefs. They also regularly feed on horseshoe crab eggs in the spring. Additionally, the Purple Sandpiper uses rocky, intertidal habitats such as jetties. Different bill lengths and feeding strategies allow mixed species flocks to forage in the same area while exploiting different food resources. Along the coast, tides influence both diurnal and nocturnal foraging. Foraging activity is focused around the time of low tide. At high tide, when foraging grounds are covered, birds roost in flocks on high shell rakes, beaches, estuarine islands, and occasionally on docks. Shorebirds may require different habitats for daytime and nighttime roosting. Roosting sites may contain thousands of shorebirds. Dunlin, Sanderlings, Red Knots, small sandpipers, and plovers primarily use beaches. Short-billed Dowitchers and Marbled Godwits are found on oyster reefs and docks. Greater Yellowlegs, Spotted Sandpipers, and Ruddy Turnstones use a variety of habitats (Dodd and Spinks 2001).



waterfowl provides supplemental habitat that may be preferred to natural mudflats (Weber and Haig 1996).

South Carolina contains many managed coastal wetlands (285.1 km<sup>2</sup> or 110.1 mi.<sup>2</sup>) that were historically used for rice production; these areas are currently managed for waterfowl. Managing for spring shorebird migrations requires specific manipulation of water levels. Shallow water can be periodically maintained in wetlands during August to October for fall shorebird migration (Williams et al. 2002). Management of wetlands for shorebirds and

Nesting habitat for Wilson's Plovers and Willets is primarily on beaches and dune systems. Wilson's Plovers nest in front of dunes or behind dunes in areas that are open due to washover. Willets nest in clumps of grass in salt marsh or dunes.

## CHALLENGES

Members of this guild share both roosting and foraging sites and are usually impacted by the same factors. Shorebirds are especially vulnerable to habitat degradation because they congregate in large flocks at key stopover sites to replenish fat during long migrations (Myers et al. 1987). Increasing coastal development threatens beach nesting shorebirds.



Because of the complicated life history associated with birds of this guild, there are many challenges in conserving these species. Disturbance by humans and boat traffic at



foraging areas reduces feeding efficiency, thereby reducing the fat available for migration or winter survival. Disturbance at roosting sites results in an expenditure of energy each time the birds are flushed and may have a cumulative effect of depleting fat reserves, particularly at key stopover areas. There has also been a decline in invertebrates available (for foraging) due to beach renourishment. Overharvests of horseshoe crabs for pharmaceutical use may also impact available forage. Finally, oil spills that degrade marine environments can have potentially major impacts on migrating shorebirds, both by disrupting feeding patterns and by leading to the direct mortality of food sources.

Increased development of the South Carolina coast continues to reduce suitable shorebird nesting habitat and may force breeding pairs into less suitable sites. Although actual nesting sites are rarely destroyed, suitability of the sites is greatly reduced when nearby development increases disturbance of nesting birds. Disturbance from sources such as humans, dogs, and boats negatively affects reproductive success by causing threatened adults to leave eggs and/or chicks unattended. Nests are also at risk from native avian and mammalian predators.

In addition, climate change may threaten nest success of some guild species as sea level rise inundates potential nesting and foraging sites.

#### CONSERVATION ACCOMPLISHMENTS

The SCDNR coordinated or conducted several surveys, including a coast-wide survey of Marbled Godwits and large shorebird roosts. SCDNR and US Fish and Wildlife Service coordinated surveys in South Carolina as part of the International Piping Plover Surveys. SCDNR partnered with multiple agencies and organizations, especially US Fish and Wildlife Service and Audubon Society to develop a South Carolina Shorebird Project. This project organized two workshops to promote shorebird conservation. This project also provided educational materials and resources to increase awareness of shorebird conservation. SCDNR and Nemours Wildlife Foundation hosted a workshop to promote the management of impoundments for shorebirds in conjunction with traditional management for waterfowl. Nesting and roosting site protection has increased due to partnerships and volunteers helping to install and maintain educational signs at important sites. The first statewide survey for Wilson's Plover breeding pairs was conducted from 2009-2011. Coastal Carolina University conducted a graduate research project on nest site selection of Wilson's plovers.

#### CONSERVATION RECOMMENDATIONS

- Conduct statewide surveys of large shorebird concentrations and Marbled Godwit roost sites in order to document important areas or habitats and document annual variability.
- Participate in piping plover surveys and color band resighting.
- Participate in International Shorebird Surveys created and sponsored by Manomet Center for Conservation Sciences.
- Conduct statewide surveys of nesting shorebirds.

- Reduce disturbance at foraging, roosting, and nesting areas by educating the public as to the effects of disturbance and the status of shorebirds.
- Work with government and private land managers to manage important shorebird roost and nest sites.
- Help private landowners manage wetlands efficiently. Brochures and technical advice from trained professionals may be necessary.
- Continue cooperative efforts with the US Fish and Wildlife Service to census and manage important shorebird roosting and foraging sites within Cape Romain National Wildlife Refuge.
- Disseminate information on and encourage use of integrated management of wetlands typically managed solely for waterfowl. Host workshops for land managers that encourage management for shorebirds.
- Develop a website with information on the status, management, and natural history of shorebirds in South Carolina.
- Participate in the Cape Romain NWR biological review to encourage closure of important shorebird stopover sites.
- Partner with researchers to better understand shorebird nesting ecology in South Carolina.

#### MEASURES OF SUCCESS

This guild of birds is subject to rapid shifts in distribution and abundance and will require adaptive management to respond to these changes. Management priorities may shift if the severity of species' declines is further documented.

#### LITERATURE CITED

- Dodd, S.L. and M.D. Spinks. 2001. Shorebird Assemblages of the Cape Romain Region, South Carolina. *The Chat*. 65: 45-67.
- Harrington, B.A., J.P. Meyers and J.S. Gear. 1989. Coastal refueling sites for global bird migrants. Pages 4293-4307. *In: Proceedings of the Sixth Symposium on Coastal and Ocean Management*, O.T. Magoon, H. Converse, D. Miner, L.T. Tobin and D. Clark, Eds. Coastal Zone. Charleston, South Carolina.
- Helmets, D.L. 1992. Shorebird Management Manual. Western Hemisphere Shorebird Reserve Network. Manomet, Massachusetts. 58 pp.
- Marsh, C.P. and P.M. Wilkinson. 1991. The Significance of the Central Coast of South Carolina as critical shorebird habitat. *The Chat*. 55:69-75.
- Myers, J.P., R.I.G. Morrison, P.Z. Antas, B.A. Harrington, T.E. Lovejoy, M. Sallaberry, S.E. Senner and A. Tarak. 1987. Conservation strategy for migratory species. *American Scientist*. 75:19-26.

Sprunt, A. and E.B. Chamberlain. 1970. South Carolina Bird Life. Second ed. University of South Carolina Press. Columbia, South Carolina. 655 pp.

U.S. Fish and Wildlife Service (USFWS). 2004a. U.S. Shorebird Conservation Plan. High Priority Shorebirds – 2004. Unpublished report. 5 pp.

U.S. Fish and Wildlife Service (USFWS). 2004b. U.S. Shorebird Conservation Plan. Southeastern Coastal Plains – Caribbean Regional Shorebird Plan. Unpublished report. 53 pp.

U.S. Fish and Wildlife Service (USFWS). 2009. Piping plover, 5-year review: summary and evaluation.  
[http://www.fws.gov/midwest/endangered/recovery/5yr\\_rev/pdf/PipingPlover5yr2009.pdf](http://www.fws.gov/midwest/endangered/recovery/5yr_rev/pdf/PipingPlover5yr2009.pdf)

Weber, L.M. and S.M. Haig. 1996. Shorebird use of South Carolina managed and natural coastal wetlands. *Journal of Wildlife Management*. 60(1):73-82.