

Wind-Up Toy of the Swash Zone — the Sprightly Sanderling

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Almost every winter visitor to the Gulf Coast shores will sooner or later encounter the delightfully busy, medium-sized sandpiper, *Calidris alba*, or Sanderling, whose common name we've received from the Old English *sand-yrðling*, "sand-ploughman." These little sandpipers are possibly the most common shorebird species in the world, being found on every continent but Antarctica.



That the Sanderling is indeed a "sand ploughman" is easy to see as it continually runs back and forth in the swash zone, constantly pausing to probe the wet sands for small crustaceans and bivalves with its sturdy black bill, and then dashing up the beach on its wind-up toy legs before the next wave arrives. It's hard not to laugh at this unusual foraging technique, but clearly it is highly successful — it takes a lot of fuel to keep those little legs perpetually running all day long!

Opening an illustrated bird guide to the page with sanderlings may bring a surprise to those of us who have only observed them in their winter plumage. Spying a male or female Sanderling sporting lovely reddish-brown and black mottled breeding colors is uncommon for most Gulf Coast visitors. The robustly-hued feathers of summer have already been replaced by a muted silvery-grey by the time sanderlings arrive to overwinter on our shores, and they don't reappear again until the cusp of their springtime migration back to their northern breeding grounds.

So what intrigue might these common and everyday little speedsters, sovereigns of the swash zone, hold for us?

Injured Sanderling in winter plumage

To start with, Sanderlings are sensational migrators. Their northward journey takes them all the way to the remote islands of the Arctic Ocean in springtime to nest and raise their young. In the western hemisphere some Sanderlings begin this journey from the Atlantic or Pacific seaboard, others from the Gulf Coast, others along the eastern and western shores of Mexico and South America, and some extreme athletes even pass the winter on the southernmost tip of Argentina, requiring them to complete a *10,000 mile* flight back to their arctic breeding grounds in the spring. The birds who winter south of the equator must begin their northward flight earlier in the year than their kin who winter in North America, but by April everyone is on the wing. Sanderlings congregate at several key stop-over locations along the coasts and throughout the central US and Canada flyways where they can rest and refuel before continuing on.



While many other species of shorebirds are also epic migrators, a distinguishing characteristic of Sanderlings, wholly unique to their sandpiper family, is the trait of having tridactyl feet, meaning they only have three forward-facing toes, having “lost” the fourth hind toe. I can’t say I have personally noticed their lack of a hind toe myself, their little black feet being mostly a blur as they charge across the wet sands. But it is precisely this unusual piece of anatomy that help them to outrun the breaking waves.

Another fascinating ability of Sanderlings is one which they share with all birds and several marine mammals —perhaps most famously known in dolphins — the ability to sleep with one half of the brain while the other half remains alert, monitoring for predators and other hazards. This phenomenon is called unihemispheric slow-wave sleep (USWS). Animals who engage in USWS will have one half of the brain functioning in a deep sleep mode, with the eye that corresponds to this hemisphere being closed, while the other eye remains open. This ability is very important for Sanderlings and other long distant migrants, especially those making long flights over open sea without a place to stop for rest, and also for times when they must rest in areas where predators are present. Sanderlings and other birds can even control how much of their brain is asleep by how wide it keeps its “awake” eye open. Amazing.

Sanderlings have tridactyl feet to aid maneuverability in the swash zone.

But perhaps the most incredible fact about these speedy little residents of the wet beach sands is one that is fraught with heartbreak. Because it’s almost impossible to go to the beach without seeing Sanderlings, I was astonished to learn that regional populations are reported to be in alarming decline. The Audubon Society states that “some surveys show an 80 percent drop in numbers in the Americas since early 1970s.” They are listed as a species of high concern by the Western Hemisphere Shorebird Reserve Network.

Sanderlings depend on only a relatively few staging areas that host abundant food resources and safe places to rest along their migration routes. The habitat integrity of these stop-over locations are rapidly

degrading in quality and diminishing in size (due to land and resource development, oil spills and other toxic contaminants, accumulation of agricultural herbicides and pesticides in estuaries and wetlands, and other human activities), and because of this a growing threat to the Sanderlings' survival has developed over the past several decades.

If a migrating Sanderling cannot meet its rest and refueling requirements and restore the body fat reserves it has consumed on its previous leg of nonstop flight, it simply will not make it to the arctic, its sole breeding grounds. To make matters worse, researchers are finding that climate change and its correlating alterations in habitat and predation patterns are also having a detrimental affect on the quality of the breeding grounds themselves, making it more difficult for the Sanderlings who do make it there to successfully reproduce.



This is disquieting news. How long can Sanderlings suffer such a dramatic loss in numbers before their future existence becomes endangered? Is it even possible for such extreme population declines to be reversed?

Some encouraging data is coming in regarding at least two other species of shorebirds, the Red Knot and the American Oystercatcher. Like the Sanderling and many other North American shorebirds, these two species have shown a serious decline in numbers since the mid-70's. But because of efforts to protect migrating Red Knots in Delaware Bay, including beach closures, habitat restoration projects and a moratorium on horseshoe crab harvesting, (whose eggs migrating Red Knots — and Sanderlings — consume in tremendous quantities) their numbers there have risen, from just 6,880 counted in 2021 to 22,000 this past spring.

In another study, the American Ornithological Society reports that conservation efforts coordinated through the American Oystercatchers Working Group has resulted in a reported population increase in American Oystercatchers of 23 percent in less than ten years.

Can the population decline of Sanderlings be reversed?

Hopefully a similar story will prove to be true for our perky little wave runners. And it's good to know that there's a few things we can do to help Sanderling populations move toward that direction.

Supporting projects like the American Bird Conservancy's *BirdScapes* that are working to preserve, restore, and protect vital staging grounds for migratory birds, can play an important role in their survival. Encouraging our elected officials to pass strong protective legislation and to continue to support protective measures already on the books (e.g., The Migratory Bird Treaty Act, which has come under attack in recent years) is also critical to halt their decline.

We've all seen pictures of shorebirds with plastic six pack rings wound around their necks. Volunteer waterway and beach clean-up projects in our communities can yield surprisingly impressive amounts of trash and keep it out of the ocean — and the swash zone. The presence of micro plastics (fragments less than five millimeters in length) in beach sand is now well documented, and research is currently underway to learn how these micro plastics may be affecting Sanderlings in particular. Imagine how much our little sand ploughmen potentially ingest as they continually probe their bills into the wet sand. Keeping our dogs from chasing Sanderlings on the beach can help prevent their fat reserves from being needlessly depleted, assuring that they're fit for the next stage of their journey. Not driving motorized vehicles on the beach allows Sanderlings to forage and rest unmolested.

We've all savored the moment — crossing the boardwalk over the dunes, the salty, pungent fragrance of the sand-loving herbs and grasses enveloping us, stepping down onto the beach for our first unobstructed view of the ocean and feeling awestruck and overwhelmed yet again by the endless sky and the rows of frothing, roaring breakers rushing toward us. Sand-colored ghost crabs startle at our appearance and scuttle sideways into their burrows. A patrol of Brown Pelicans silently glide a few feet above the breakers, and up the beach a group of Sanderlings run from the last breaking wave, then suddenly wheel in unison and chase its sliding waters back to the sea, stabbing the freshly exposed sand in search of mole crabs and cocina clams. Sanderlings have lived and flourished at the edge of the sea for tens of millions of years. If our own species can learn to practice good stewardship, they should be lords of the swash zone for millions more to come.