Bruce Museum Seaside Center Activity: 
Let’s Look at Shorebirds!

A guided exploration for use along the Long Island Sound 
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*Note: This is part of a series of educational pamphlets and activities released as part of the Seaside Center’s Digital 2020 Season. For access to all our content, please visit: http://www.storagetwo.com/seaside-center

A Dunlin, Calidris alpina

Introduction

Late summer is the best time of year to see shorebirds along the Sound. While “shorebird” may be a good descriptor for any bird that lives along the shore, here we’re referring to a specific subset: sandpipers, plovers, and associated waders. These birds do not form a distinct family group— a “shorebird” is really any member of the order Charadriiformes (which also includes gulls and terns) that wades, walks, or probes through mud and sand. Common characteristics of these shorebirds include long legs, a long, thin bill, narrow wings, and migratory behavior.

In our area, late summer is prime shorebird time, because many species are on their way south from northern breeding grounds. A majority of North American shorebirds nest in the far north and embark on long journeys to winter territory in the southern US or Latin America each fall. Of
course, in such a diverse group as shorebirds, it seems that all possible strategies are explored: here on the Sound we have some shorebirds that nest (American Oystercatcher, Piping Plover, Willet), and others that spend the winter (Purple Sandpiper, Sanderling, Ruddy Turnstone).

During migration, when shorebird diversity is highest, a walk along a beach or mudflat will probably turn up several species in close proximity, moving and feeding together. This is what birders call a mixed-species flock. When looking over one of these flocks, however, you'll notice that not all species are doing the same thing. Each species is slightly different, and feeds in different habitats, on different prey. Some stand in the water, probing the deep mud. Others poke into the wet sand. Still more pick along the wrack-line, or chase the waves back and forth: each role is an example of an ecological niche, a specialization that allows species to exploit available resources while avoiding competition.

In this guided exploration, we'll look at different shorebirds to see how their characteristics align with the niche they inhabit. We'll focus on what seems like the most variable feature of shorebirds: their bills. The shape of a bird's bill directly determines what prey and habitat they can forage on/in. By making the connection between bill shape/size/structure and prey/habitat, we can better understand the evolutionary relationship between form and function that explains why different birds look the way they do. As a result, we are able to make predictions about some species' life history by looking at the bill alone. Let's get started!

Let's look at shorebirds!

Of the many shorebirds we can see along the Sound, some are unique, while others are quite similar to one another. The same goes for these species' bills. In the following guide, we'll run through several “categories” of shorebird bill, exemplified by species you might see in this area. We’ll link the bill type to other facets of the selected birds' ecology too, including habitat and diet. Afterwards, we'll look at some more unusual shorebird species and ask you to make predictions: what do you think this shorebird eats? Where do you think it lives? Hopefully by then you’ll have the toolbox to answer these questions correctly and with confidence!
Bill Type #1: Short, squat, “pickers”

Species Profiled: **Piping Plover**, *Charadrius melodus*

Foraging technique: Plovers run along the shoreline within the “splash zone,” picking at any small invertebrates deposited on the beach by waves. They may also take invertebrates off of rocks or any detritus that builds up. Their small bills can’t probe, so they have to pluck small prey from the surface of the sand and mud.

Diet: Small worms, amphipods, larval crustaceans. Generally, tiny invertebrates we might see squirming in wet mud or sand!

Other common plovers such as the **semipalmated plover** (*Charadrius semipalmatus*) and **black-bellied plover** (*Pluvialis squatarola*) have similar stubby beaks and engage in “run-stop-pluck” feeding behavior as well: all taking small invertebrates. The black-bellied plover’s bill is a bit more elongated than the piping’s, but is the same general shape.

Bill Type #2: Thick, flattened, “wedge”

Species Profiled: **American Oystercatcher**, *Haematopus palliatus*

Foraging Technique: Searches through partially submerged shellfish beds, rocky shorelines and/or soft sand looking for prey (or clues to its presence). Uses its wedge-like bill to pry between the shells of bivalves and force them open. Can also move a closed bivalve to a hard surface and “hammer” it with the fine tip of its bill, opening it. When looking for shellfish submerged in the sand, may probe deep to get at the prey.

Diet: As this bird’s name suggests, oystercatchers feed primarily on bivalves, such as oysters, clams, and mussels. Its bill is thick and flattened to pry open bivalve shells, or simply break them—both strategies may come in handy.

Oystercatchers are a unique shorebird: no other species feeds on adult bivalves (some species, such as plovers, may pick up the tiny larvae whose shells have not hardened). As a result, oystercatcher bills are completely unlike any other species’.

Bill Type #3: Short, pointed, “shallow probers”
Species Profiled: **Least** (*Calidris minutilla*) (L) and **Semipalmated** (*Calidris pusilla*) (R) **Sandpipers**

Foraging Technique: Both species shown here can pick from the surface and probe in mud-silt substrate. Generally “picks” from surface when following the falling tide, spotting organisms left behind, and “probes” when the tide is out, sensing prey with the bill-tip. Averse to wading in water more than a few centimeters deep. May also pick along the edge of marshes.

Diet: Mainly amphipods (when picking from surface) and small worms (when probing beneath).

**Bill Type #4: Long, robust, “deep probers”**

Species Profiled: **Short-billed Dowitcher** (*Limnodromus griseus*) (L) and **Whimbrel** (*Numenius phaeopus*) (R)

Foraging Technique: These two featured species have very differently shaped bills, and forage in different habitats, but the general function of the bill is the same. The entire length of the bill (several inches) can be inserted deep into mud or sand to get at large subterranean worms and small burrowing bivalves. Whimbrels especially will probe after burrowing crabs. “Deep probers” often have a prehensile, or flexible, bill-tip capable of opening independently of the rest of the bill. These prehensile tips are used to grasp prey. Many larger shorebirds are “deep probers,” as
the prey they search for deep beneath the mud is larger than any found on the surface. They may also wade into deeper water (belly height) to get at the rich muds present there.

Diet: Larger burrowing worms, small bivalves, crabs and other crustaceans.

**Bill Type #5: Long, thin, “jabbers”**

Species Profiled: **Greater Yellowlegs, Tringa melanoleuca**

Foraging Technique: Feeds on food in the water, jabbing bill like a spear or sweeping it from side to side just under the surface to pick up prey. Will actively run through the shallows and lunge at schooling fish.

Diet: Small fish, aquatic insects, assorted invertebrate larvae.

Not all thin-billed jabbers feed on fish, which are often too big: the greater yellowlegs is one of the larger “jabbers” around and its diet is somewhat unique. Many “jabbers” feed only on aquatic invertebrates, and are typically long-legged so that they can move quickly through the water in pursuit of mobile prey.

The categories above are not exhaustive, but might give you a sense of what shorebird bills are out there. Each is specifically adapted to feed on select prey, under select conditions! A “picker” can not feed on large worms in the mud; a “prober” can not hunt down fish in the shallows. Now, let’s take what we’ve learned and make predictions about species we otherwise know little about.

**Mystery Birds!**

For each of the birds below, ask yourself the following:

- How might this bird feed? (picking, jabbing, probing, etc.)
- What sort of habitats might this bird be specialized to?
- What kind of prey might this bird eat?

*Answers at the end! Each of the following species is unusual, but regular, on the shores of the Sound during migration.*
#1.

#2.

#3.
Answers:

Species #1: **Red Knot, Calidris canutus**
Foraging Style: “Shallow Prober”
Habitat: Beaches, mudflats
Diet: Small crustaceans, bivalves, horseshoe crab eggs in or just below the surface of the sand/mud.

Species #2: **Wilson’s Phalarope, Phalaropus tricolor**
Foraging Style: “Jabber.” Either “spins” while sitting on water to bring aquatic invertebrates to the surface, which it then picks off with sharp jabs (unique behavior) or sweeps needle-like bill through shallow water while wading, gobbling up small prey.
Habitat: Shallow wetland pools, fresh and saltwater.
Diet: Small aquatic invertebrates like fly larvae or tiny crustaceans.

Species #3: **American Avocet, Recurvirostra americana**
Foraging Style: “Jabber,” but modified. Very thin, upturned bill is very distinct, used to “scythe” through the water column or along the bottom for aquatic invertebrates and small fish. Long-legged, can forage in deeper water than many other shorebirds.
Habitat: Shallow salt-water and mudflats.
Diet: Small crustaceans, arthropods or fish in water column or along bottom.

If these answers are consistent with your predictions, congratulations! You’re well on your way to becoming an expert birder! If not, no worries— we’re all learners here! The avocet especially may have tripped you up, with a bill very unlike what we’d seen before: in that “mystery,” some of the key things to hone in on were the bill’s narrowness, its pointed tip, and the bird’s “long-legged” appearance which suggests it forages in the open water.

Shorebird migration lasts well into the fall, so you have plenty of time to test out your new-found skills in the field! Different species come through at different times, too, so the diversity of species present is always changing.

Hope you learned something here! Best of luck!

Cheers,

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