EXPLORATION 1: SHOREBIRD MIGRATION

Main Problem

Migratory shorebirds depend on multiple ecosystems across vast geographical distances. Changes in one ecosystem may affect another ecosystem. According to the German Nature and Biodiversity Conservation Union (NABU), the *Wattenmeer* is "the single most important wetland in Germany." It plays a significant role in the survival of migratory birds that use the East Atlantic Flyway. The East Atlantic Flyway stretches from high Arctic breeding grounds to wintering grounds along western coastlines of Europe and Africa. The location of the Wadden Sea allows waterbirds to refuel prior to either long-distance flight to high Arctic breeding grounds or to southern wintering grounds. Several species of waterbirds breed in the *Wadden Sea*. It serves as a staging, wintering, and molting site for fifty-two populations of forty-one migratory waterbird species. These birds are dependent on the food, shelter, and other resources offered by the *Wattenmeer*.

Guiding Question

What are some of the threats migratory bird populations face at the Wadden Sea?

Background Information on Migratory Shorebird Flyways

Perhaps you live in a migratory shorebird flyway and have heard the sounds of honking geese flying south in a V-formation overhead in winter, or witnessed hundreds of wading birds feasting on horseshoe crab eggs in May along the Mid-Atlantic shores. There are eight major migratory shorebird (waders) routes: Pacific Americas, Central Americas (which

merges with the Mississippi Americas flyway), Atlantic Americas, East Atlantic, Black Sea/Mediterranean, West Asia/East Africa, Central Asia, and East Asia-Australasian.

In the Americas, the three main pathways are the Pacific, Mississippi, and Atlantic. Shorebirds breed in the high Arctic during the summer and spend winter as far south as the tip of South America. Intermediate points along the way are important refueling stations for a thousand-mile journey.

Similar migrations take place in Europe and Asia. The main shorebird flyways of Asia and Western Africa are West Asia/East Africa, Central Asia, and East Asia-Australasian. The two main flyways of Europe and East Africa are East Atlantic and Black Sea/Mediterranean.

The *Nationalpark Schleswig-Holsteinisches Wattenmeer* is located in the East Atlantic Flyway. Its location is crucial to the survival of shorebirds or, as they are called in Europe, waders (in German also *Küstenvögel*, coast birds; or *Wattvögel*, mudflat/tide flat birds). The waders that travel the East Atlantic breed in the high Arctic during the summer. In late winter and early spring, they begin their migration from wintering grounds in southern Europe and eastern Africa. The national park serves as a refueling station for birds whose travels began thousands of miles from the *Wattenmeer*. There are some species of shorebirds that make nonstop long-distance flights and arrive at the national park near starvation, such as the arctic tern. After bulking up on mussels, cockles, insects, worms, fish, and plants during their stopover at the Wadden Sea, the shorebirds continue to their high Arctic breeding grounds, where their diets for the summer may change to insects or other nutrient resources unique to the Arctic ecosystems. A few shorebird populations remain in the national park and find

breeding grounds in the habitat on the mainland and islands of the park, like the Eurasian Oystercatcher. In late summer and early fall, the migration reverses as birds leave the high Arctic and head south for the winter.

Migration is dangerous. Along the route, birds face food shortages, unforgiving winds, storms, predators, loss of habitat, and hunters. You will be taking part in a migration simulation, playing role of a bird in migration. You will need your Migration Passport to keep track of your energy gains and losses. Good luck on your journey—*viel Glück auf eurer Reise*!

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