

Accessible habitat for shorebirds: factors influencing its availability and conservation implications.

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The amount of wetland habitat (ha) accessible to foraging shorebirds is positively related to the length of their tarsusmetatarsus. In southeastern United States, small Calidrids (e.g., Dunlins, Semipalmated Sandpipers) are a numerically important component of the 2.5 million migrants using inland and managed wetlands. Habitat consisting of moist substrates up to 4 cm depth explained most of the variability in numbers for these two species. Formulating habitat conservation goals would be well served by understanding the relationship between hydrology and accessible habitat, and its implications on shorebird use and prey base dynamics. We assessed these relationships at Pea Island and Merritt Island National Wildlife Refuges in 1998 and 1999. At Pea Island, and as expected, shorebird numbers were inversely related to water depth at the micro-level (e.g., study plot). At the impoundment level, the relationship between shorebird numbers and accessible habitat (ha of 0-4 cm depth) was positive up to 8 ha, after which it leveled off. This relationship suggests that the migrant population did not increase indefinitely (i.e., there were seasonal peak numbers) and helps define water level targets that would create sufficient accessible habitat to accommodate them. Density of six prey species was not adversely affected by manipulating impoundment water levels. Our approach serves as a first-level assessment of such relationships. Given the scarcity of life history data on prey species, follow-up studies would be needed to elucidate underlying cause of negative trends. At Merritt Island, shorebird use was inversely related to variability in water depth. Minimizing the frequency and amplitude of water level fluctuations improves the quality of accessible habitat. After adjusting for accessibility, foraging habitat requirements for Dunlins and Semipalmated Sandpipers were met at Pea Island. Dunlin requirements during winter were met at Merritt Island, but depended on adopted prey biomass levels. Our findings underscored the importance coupling basic, but reliable information on accessibility with other metrics (e.g., species composition, shorebird site population dynamics, prey biomass) to implement realistic habitat conservation goals. Better coupling of these metrics should emphasize staging vis-à-vis stopover sites due to its more intimate relevance to shorebird energetics.