

(Brown and Dinsmore 1986). Specifically, the amount of marshland within 5 km of each site was a key determinant of the number of species to be found in a marsh. Marshes that were significantly isolated from each other did not have the species richness of wetland complexes where the marshes were closer together, even when the isolated marshes were twice the size of the complexes.

Craig and Beal (1992) studied one large and several small marsh habitats encompassing the four principal marsh types along the Connecticut River in order to assess their significance in maintaining marsh bird populations. They found a difference in the behavior of breeding birds and users, those species that use the marshes for foraging and resting. Breeder richness (the number of species breeding in the marshes) was directly related to area

and inversely related to water cover and habitat heterogeneity. For users, the most significant variables were marsh proximity, water cover, and vegetation heterogeneity. For users, the importance of marsh proximity has to do with the fact that a number of species, e.g. waders, gulls, and terns, who forage on ephemeral prey, need to roam between a number of habitats to meet their needs. Users preferred open water because they were good foraging sites. Thus, habitat heterogeneity was critical for users and consequently marsh proximity became important.

A study of the activity budgets of wintering Green-winged Teal (*Anas crecca*) in Louisiana confirms the consequences of wetland habitat diversity (Rave and Baldassarre 1989). About half of all the Green-winged Teal winter in the U.S. on coastal wetlands in Louisiana. The species behaves differ-

ently depending on whether it winters in agricultural habitats as it does in Texas or is in natural habitats, as in Louisiana. There are six major habitats used by the teal in Louisiana and their four main activities, feeding, resting, locomoting, and preening were each concentrated in different habitats.

The absence of the proper mix of wetlands can be devastating to the breeding ecology and hence the reproductive rates of a species. White Ibises (*Eudocimus albus*), which breed in coastal South Carolina, require the presence of freshwater wetlands as a source of crayfish for their nestlings (Bildstein et al. 1990). During dry years, when the inland freshwater wetlands do not yield crayfish, adult White Ibises bring back salt-water based fiddler crabs for their young who subsequently die from the excessive salt loading. If substantial quanti-

**Table 1. Population Trends of Selected Wetland Birds in North America**

Population Change (percent change)			Population Change (percent change)		
SPECIES	1966-1993	1984-1993	SPECIES	1966-1993	1984-1993
Pied-billed Grebe	-41.3*	-48.6*	Common Goldeneye	-14.6	26.3
Anhinga	-39.6	-54.1*	Virginia Rail	- 2.1	-10.1*
American Bittern	-38.9*	-25.5*	Sora	-44.4*	-29.2*
Little Blue Heron	-29.9	- 17.5	Greater Yellowlegs	31.9	-17.5
Green Heron	- 7.6	- 9.8	Lesser Yellowlegs	-72.9*	-62.4*
Green-winged Teal	-25.5	-20.5	Willet	-15.2	-14.1
American Black Duck	-27.1	- 5.5	Long-billed Curlew	-36.5	-46.4*
Mottled Duck	-78.8*	-46.3	Wilson's Phalarope	- 2.1	-41.0*
Northern Pintail	-76.4*	-24.8	Royal Tern	-31.0	- 8.1
Blue-winged Teal	-16.8	-31.5*	Common Tern	- 5.4	-67.0*
American Wigeon	-11.3	-20.0	Least Tern	-69.4	-14.5
Canvasback	-28.6	-62.1*	Black Tern	-71.6*	- 8.8

Source: Price, Droege, and Price (1995)

\* = Statistically significant declines.