

ABSTRACT

The Seasonal Composition of Waterbirds of a Jamaican Coastal Wetland and the Effect on the Population of Increasing the Available Habitat

Anne C. E. Morgan

This study sought to illustrate how the construction of artificial wetlands could be used to enhance the avifaunal populations of Jamaican wetlands. The composition and abundance of the avifauna in a natural wetland (Flashes) and an artificial wetland (sewage ponds) was documented and the effect of the artificial wetland on species composition and population numbers was assessed. Additionally, a Habitat Suitability Index Model was used to generate an index of suitability of the natural and the combined natural and artificial habitats for four species, representing four sizes and feeding guilds: large waders, small waders, probers and divers.

Monthly population counts were conducted in the Flashes and at the sewage ponds. Six sites were chosen in both locations. The sampling period at the Flashes was January 1992 - June 1993 and June 1992 - June 1993 at the sewage ponds. The fish species of the Flashes were sampled once, in February 1993. The vegetation of the sewage ponds was collected once in March 1993. Information on the vegetation and benthic invertebrates of the Flashes was obtained from previous studies. Assumptions for the HSI were obtained from published sources and personal observations.

Seasonal variations were marked at both the Flashes and the sewage ponds, with avifauna population numbers in the Flashes greatest in the winter/spring months, and greatest in the autumn months at the sewage ponds. On average, more individuals were found in the Flashes, but there was a greater fluctuation in numbers of individuals seen at the ponds. A definite species association was observed for both the Flashes or the sewage ponds, with two

distinct faunas associated with each area. The species composition of the Flashes was determined primarily by vegetation cover, more of which was available in the Flashes than at the sewage ponds, with a number of species (e.g. Yellow and Black-crowned Night Herons, Clapper Rail) observed using this cover.

The Flashes are a marginal to fair habitat for the four types of species chosen, with index values ranging from 0.39 to 0.59. The habitat is best suited to the prober, the Black-necked Stilt, and the large wader, the Great Egret. The combined habitats improved habitat suitability for the Great Egret (large wader) and the Snowy Egret (small wader), with the SI value for the Great Egret increasing from 0.54 to 0.75 and from 0.39 to 0.51 for the Snowy Egret. Model predictions were borne out by the observed records for the Snowy Egret and the Black-necked Stilt.

Migrant input is the most likely explanation for the seasonal increase in numbers detected, but the possibility exists that some of the increases are attributable to intra-island movements. A low resident use of the natural and artificial wetland sites is also indicated. The association of some species at the artificial wetland (sewage ponds) indicates that the ponds may have influenced the species composition of the avifauna of the area. The Habitat Suitability Index (HSI) models devised have predicted that improvement in the habitat quality of the artificial wetland increases suitability for the wading birds, but marginal suitability for probing and diving birds. However, as these findings were obtained during the construction phase of the development, the effectiveness of the models can only be fully tested on completion of the artificial wetland. An increase in habitat suitability is expected for all the species presented in the models on completion of the project.