USGS

Patuxent Science Meeting 2004 Poster Abstract

Production of Sagittaria platyphylla tubers in a managed impoundment at Yazoo National Wildlife Refuge, Mississippi

Kenneth J. Reinecke and Kevin M. Hartke

Delta arrowhead (Sagittaria platyphylla) and other species of Sagittaria are important in wetland restoration and management, in part, because tubers produced by Sagittaria are used as food by migratory waterfowl and other wetland wildlife. We used 3 experiments to evaluate tuber production by delta arrowhead in a managed wetland impoundment at Yazoo National Wildlife Refuge in western Mississippi. Objectives were to: (1) estimate mean dry-mass of tubers produced; (2) determine the extent of tuber removal by migratory waterfowl during winter; and (3) investigate the extent to which measurements of stem density, leaf width, stem length, water depth, and soil penetrability explained variation in tuber production. Using 'double-sampling for stratification', we estimated mean tuber biomass for the whole impoundment as 437 kg/ha (± 46 [SE]) in November 2002. Tuber biomass in sampling strata with low, medium, and high densities of Sagittaria stems averaged 240, 410, and 803 kg/ha, respectively. In March 2003 after waterfowl migrated, we estimated the mean rate of tuber exploitation as 173 kg/ha (± 62) and residual tuber biomass as 264 kg/ha (± 46). In contrast, tuber biomass did not differ (P = 0.783) between fall and spring in areas protected by exclosures. Analysis of regression models indicated density and mean length of Sagittaria stems were best predictors of tuber production, explaining about 70% of variation in tuber biomass. Overall, tuber production in the impoundment we sampled was substantially less than reported from previous studies along the Gulf Coast, apparently due to decreased size and density of tubers.