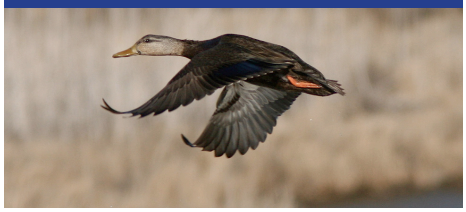
INTEGRATED WATERBIRD *Management & Monitoring*

A continental landscape where non-breeding waterbirds have the right habitat, in the right place, at the right time.

PUBLICATION SUMMARY



American Black Duck. Henry McLin

Efficiently Managing Waterbirds at Two Rivers National Wildlife Refuge: Using IWMM to Assess Costs and Returns

Loges BW. 2017. Waterbird Migration Summary for the Fall of 2016 through Spring 2017 Season and Comparisons of Management Costs for Two Rivers National Wildlife Refuge, Illinois. USFWS Unpublished Report. Brussels, IL. 16p.

THE PROBLEM

Thousands of waterbirds feed annually in the Calhoun Division of Two Rivers National Wildlife Refuge, Calhoun County, Illinois. Waterbirds are attracted by the Division's numerous small moist-soil impoundments as well as the more prominent Swan Lake. When resources and river levels allow, the refuge intensively manages all of these wetlands to provide forage for migrating and wintering waterfowl. The Swan Lake units are managed by altering water levels relative to the adjacent Illinois River, while the moist-soil units are managed to promote early successional plant communities and shallow water. However, the refuge operates on a limited budget and needs to understand the value of its management in terms of wildlife benefits to identify the most efficient approaches for its wetlands.

THE IWMM APPROACH

Although refuges typically manage their units to meet multiple objectives, refuge staff wanted to assess the relative return on their management activities in terms of a primary objective: maximizing dabbling duck-use days across the refuge's complex of management units. Therefore, for each unit, data collected under the Integrated Waterbird Management and Monitoring (IWMM) protocol were used in conjunction with management costs to evaluate returns on investment and to make cost efficiency comparisons.

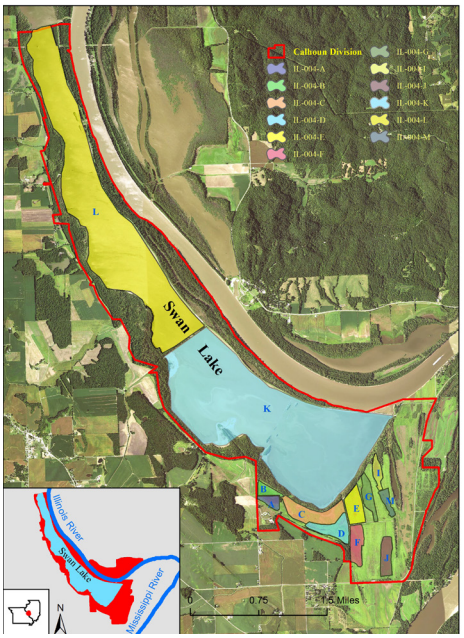


Figure 1. Managed wetland impoundments as IWMM survey units on the Calhoun Division of Two Rivers NWR. The two large units, Il-004-K and Il-004-L, are sub-impoundments of Swan Lake.

METHODOLOGY

IWMM waterbird and habitat surveys were conducted and management actions were tracked in each of the managed units throughout the 2016/17 non-breeding period. Data were entered in the IWMM – AKN database and used to generate a dabbler-use-day (DUD) measure and a seed production index (SPI) to assess waterfowl food quantity in each unit. The proportion of each unit flooded over the migration season was recorded to account for the influence of fluctuating water levels on the availability of dabbling duck habitat at the unit scale. The total DUDs were then adjusted by flood frequency for comparisons across units. Management costs were estimated based on cost estimates provided in IWMM's National Protocol Framework. The acre-based cost for each action implemented was summed for the period of interest to calculate the management cost per unit. Because benefits from management actions in moist-soil systems may persist for only a few years before plant succession shifts back to woody or perennial herbaceous vegetation, management actions for the 18 month period leading up to Nov 1 2016 were reviewed.

RESULTS/FINDINGS

Total waterbird use-days on the Calhoun Division was 8.3 million for the period of September 1st 2016 through March 31st 2017. The dabbling duck guild represented 80% of this use (6.7 million use-days), and reflected the implementation of the moist-soil management strategies targeting these birds. In all but two units, moist-soil seed production was described as high or moderate. The two Swan Lake survey units provided 96% of the overall waterbird- and duck-use days, and bird use exceeded estimated carrying capacity. The Swan Lake units outperformed all but two of the moist-soil units, a contribution attributed not only to the units' large size, but also to the favorable habitat conditions resulting from a summer drawdown.

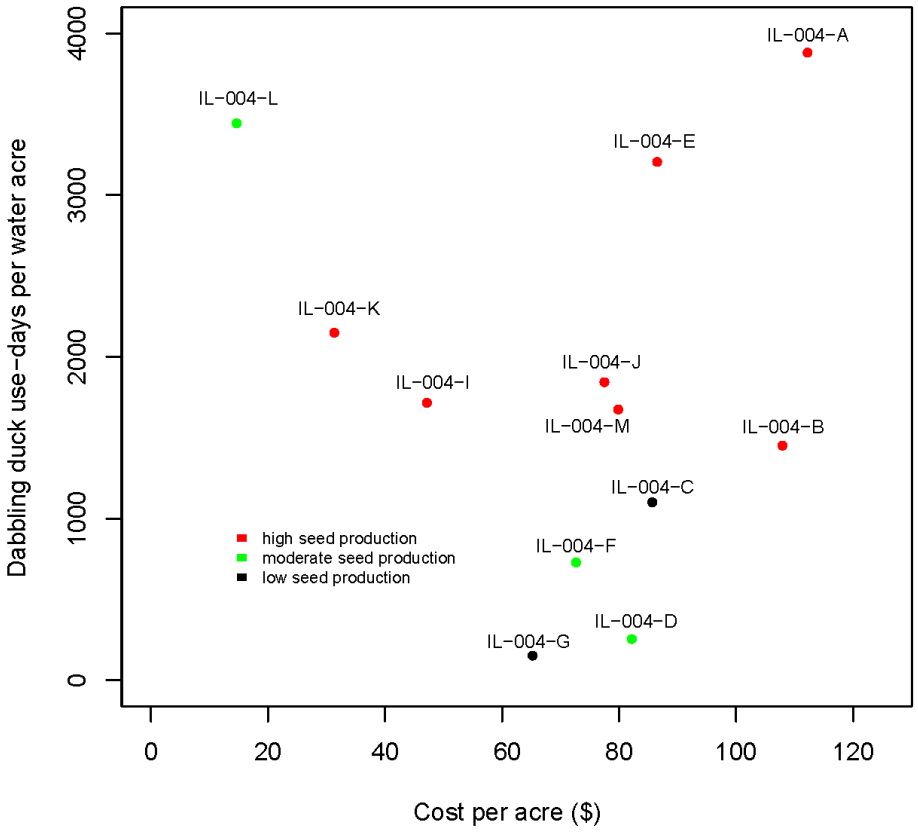


Figure 2. Scatterplot of adjusted dabbler use-day totals to management cost by unit and color coded to reflect seed production quality derived from unit scale seed production index values. Swan Lake is represented by units Il-004-K and Il-004-L

The total estimated cost for the 18 month period across all management actions and units was $85,412 or roughly $57,000 per year. Across the Swan Lake units, partial drawdowns were successfully implemented on 823 acres (333 ha), with an average cost per dabbler use-day of $.008. While estimates of costs per waterbird use days are limited in the literature, costs of managing Swan Lake were considerably less than those reported in a single reference from a 1981 study in SE Missouri. Our analysis indicated that the effort to manage the Swan Lake units was clearly the most efficient allocation across the entire division despite the high operating costs. Although river flooding and local precipitation events often prevent annual drawdowns in Swan Lake, when drawdowns are possible, the actions yield high returns in bird-use days.

FOR MORE INFORMATION

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