

Effects of plant age and clone on nesting bird biodiversity in short-rotation woody crops in Upstate New York

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The *Salix consortium* pools the research and investment resources of over 20 corporations, associations, universities and regional government agencies to develop an economically and environmentally sustainable business in energy crops for bio-energy and bio-products. In the context of this multi-partner project we studied effects of plant clone and age on avian biodiversity in plots planted with various willow and poplar clones across Western and Upstate New York. During the breeding seasons 1998-2001 we collected information on nesting birds in 15 plots covering a total of 55.7 ha.

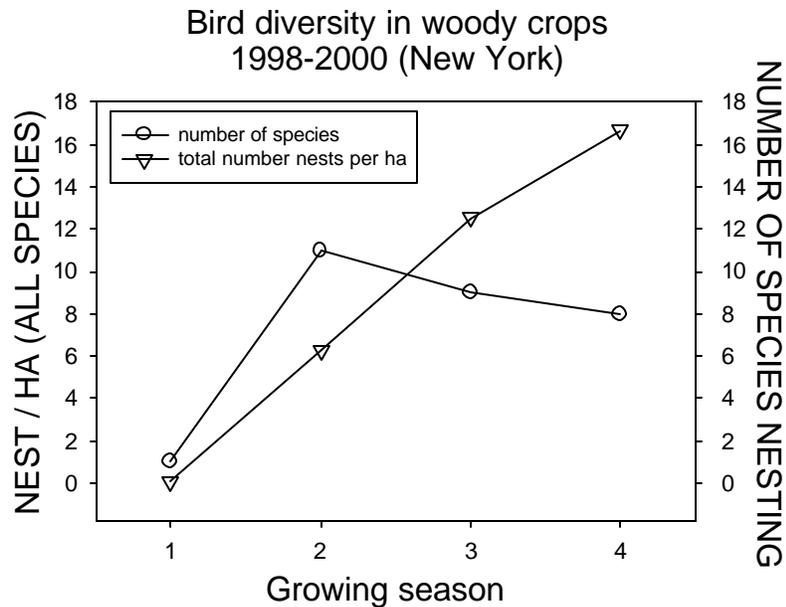
From April to September each plot was visited every 7-10 days. We used spot-mapping techniques to census birds during each visit [1,2]. For all the plots we walked the perimeter of the plot mapping any birds detected and afterwards we walked transects through the plot. This procedure was adopted to minimize disturbances as much as possible. All birds observed were identified and their location and behavior recorded on a map. Plots were also exhaustively searched for nests. When nests were found the content was recorded, the species determined and a flag with date found, species and nest content attached to a nearby tree. Nest fate and content was determined during later visits. A mirror attached to a pole was used to determine nest content of nests built above eye height. In late September and October after the leaves had fallen to the ground, the plots were revisited to determine if any nests had been missed during the growing season.

The study plots on which this report is based were planted between 1996 and 1998 thus providing plots of various ages. We analyzed the results by growing season, because it can be expected that avian diversity changes with plot age [3]. No bird nests were found in the season in which the biomass crops were planted. During the winter after planting the plants were coppiced, generating more side sprouting in the following growing season. We call "season 1" the year after this initial coppicing. Later seasons are numbered consecutively. Although it was initially planned to cut the plantations for co-firing after growing season 3, several plots were not cut as initially planned, so that we can also report on nesting during growing seasons 4 and 5.

The information for the 2001 breeding season is not included below, although the results will be reported at the conference. We found nests of 13 bird species in the plots. The number of bird species increased from season 1 (one only) to season 2 (11 species), with somewhat smaller numbers in season 3 (9 species) and season 4 (8 species). In contrast to this result the total nest density increased with age of the willows and poplars (Fig. 1).

Certain clones were preferred or avoided for nesting, although the preferences varied between species. Thus the more robust poplar clone NM6 was avoided by American goldfinches *Carduelis tristis* and willow flycatchers *Empidonax traillii*, but preferred by American robins *Turdus migratorius*. Willow clone S365 was preferred by yellow warblers *Dendroica petechia*, and willow clones SV1 and SA2 were preferred by willow flycatchers.

Avian diversity and nesting density in the short-rotation woody crop plantations in Upstate New York is very much as expected in early successional habitat in the region.



REFERENCES

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