

Progress Report 2005/2006

Project: Wildlife and forage-quality benefits of a late-maturing hay cultivar

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This project continues with research conducted at the Belleisle Wildlife Management Area by Joe Nocera and focuses on two main questions:

1. Can the use of a late maturing hay cultivar offset forage quality loss for beef cattle from fields under a delayed cut?
2. How are the vertebrate and invertebrate communities impacted by the late cultivar hay fields in comparison to older, conventional hay fields?

The importance of a delayed cut is that it's been shown to benefit nesting grassland birds by providing enough time for young birds to fledge (high mortality rates in fields with regular cut times). However, the loss of nutritional quality is of major concern for farmers. This project looks at the potential of late maturing hay in meeting the habitat needs of wildlife in the fields, as well as the nutritional needs of livestock.

1. Forge Quality*

The first year of forage sampling was completed. Data was compared to a delayed cut date of July 7th, as Joe Nocera's past research demonstrated that grassland birds (Bobolinks, Savannah Sparrows, and Nelsons Sharp-tailed Sparrows) in and around Belleisle fledge the majority of their young by the first week of July. Analysis results of forage samples collected from both the late cultivar fields and adjacent conventional hayfields support that fields planted with a late maturing cultivar can still provide adequate forage for beef cattle, while improving habitat for grassland birds. In January, a 12 minute presentation titled "Late maturing hay, forage quality, and grassland birds: Conservation you can chew on!", was given on the analyses results of the forage research at the Atlantic Workshop of the Canadian Society of Agronomy (CSA), in Charlottetown, PEI. The talk was well received and created a lot of questions and feedback. The same talk will also be presented at the national CSA conference in Halifax in August.

2. Diversity

Invertebrates

This part of project focuses on the collection and identification of ground beetles, grasshoppers, and butterfly/moth larvae diversity between field sites. There are a number of reasons for this, including that the Orders of these insects (Coleoptera, Orthoptera, and Lepidoptera) are the most commonly consumed groups of invertebrates by North American grassland birds. Sampling was conducted with pitfalls and sweep-netting, as well as some night lighting to build an adult moth reference collection.

Thus far, the ground beetles caught up to July 1 (actual delayed cut date) and the grasshoppers (caught in August) have been totaled and compared. For ground beetles caught before July 1st, 18 species and a total of 917 specimens were caught and identified

in pitfall traps placed in both field types and in some rough cover areas (old fields). Shannon Wiener Index averages (means) for the two field types (early and late cultivar) were compared using a student *t* test for similarity. The initial analyses suggests species diversity was higher in the early fields (mean = 1.9633) than the species diversity of the late fields (mean = 1.6467; $t = 3.2451$, $p = 0.06883$ (two-tailed), d.f. = 2.3). In addition a ground beetle reference collection.

Lower numbers (relative to sampling effort) of grasshoppers and butterfly/moth larvae were collected in comparison to the previous year (personal observation). These low numbers are believed to be due to the six weeks of constant rainfall we had from April to the end of May. Adult grasshoppers were not caught until August (again believed to be a result of the cool, wet early spring). In total only four different species of adult grasshoppers were caught totaling 20 individuals from 120 sweep net samples. In addition, 60 immature specimens were also caught in August. A reference collection has been started for the grasshoppers and sampling in 2006 will extend into early September to ensure grasshopper populations in the fields are adequately sampled.

Sweep-netting and five evenings of night lighting has resulted in a reference collection consisting of ~ 50 adult Lepidoptera species. In addition, six larvae specimens successfully reared to adult stage (to assist in identification) and two are expected to emerge in the spring. A digital collection has been started of Lepidoptera larvae collected from fields that are being reared to assist in future identification efforts.

Vertebrates

Vertebrate sampling focused on two groups of birds that nest in hayfields: grassland birds and waterfowl. Sampling was conducted with point counts to identify abundance and diversity of birds in the fields, and nest drags to look at what is nesting in the fields. Although the number of waterfowl nesting in our study area (77 ha of hayfields) would never be very high, we would like to create a better picture of how many waterfowl are using the fields.

A nest drag was scheduled for May, with a second being conducted in June for potential re-nesters. Due to the inclement weather, the nest drag for May was not conducted and it therefore seemed an inefficient use of time to conduct one in June. However, three waterfowl nests were opportunistically located and an attempt was made to monitor the nests as the field season progressed.

- Nest #1: Blue-wing Teal (11 eggs in early cultivar hayfield) - Could not relocate nest later in season; outcome unknown
- Nest #2: American Black Duck (11 eggs in early cultivar hayfield) - Nest predated.
- Nest #3: Northern Shoveler (9 eggs in late cultivar field) – Nest successfully hatched.

Point counts were conducted from the end of May to mid July. In total, 18 species of birds were recorded (including species other than grassland nesting birds). Presence and

number of birds were recorded. In addition, for Bobolinks, Savannah Sparrows, and Nelson Sharp-tailed Sparrows, behaviour was recorded to identify peak fledgling periods.

Vegetation

Vegetation sampling in both field types resulted in the collection and identification of ~30 species in the early cultivar fields and 16 in the late cultivar fields. The data is based only on late June sampling as plants sampled before late June resulted in a large number of specimens (especially grasses) that were not flowering and there for very difficult to key out to species. Data was also collected for litter depth, % cover, and vegetation height/density.

Initial analysis of the grassland bird and vegetation data has yet to be completed. To reduce the possible impact inclement weather for 2006 and the logistical headaches of traveling back and forth from Belleisle and Wolfville, accommodations have been obtained close to the field site and will be used from May until the end of July. This will allow use to spend more time in the field (reduce traveling) and capitalize on short periods of decent weather (if long periods of inclement weather continue to be a concern).

* **Note:** I have included a copy of the presentation given at the CSA Atlantic Workshop in Charlottetown.