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ESTABLISHING NATIVE WETLAND PLANTS AS NESTING COVER ON ORGANIC SOILS

by Eugene E. Woehler

The Wisconsin Department of Natural Resources has purchased over 415,000 acres for wildlife production and to provide recreational opportunities. Over 2/3 of these acres are wetlands, mostly sedge meadows or cattail marshes. Often these wetlands are dry during late spring and are some of the most important nesting habitat for pheasants and ducks in Wisconsin. Wetlands still wet underfoot in early May are of little potential value as nest cover.

Unfortunately, wetland or organic soils are difficult to manage, and most nest cover management is relegated to upland mineral soils. Unmanaged wetlands frequently become monotypic stands of canary grass or nettles or succeed into shrub swamps, reducing their attractiveness to nesting birds.

The key to managing organic soils therefore, is to maintain a diverse plant community free from woody vegetation, and to generate vegetation resilient enough to withstand the compaction of snow cover and still provide residual cover the following spring. One approach to managing organic soils is to establish native wetland plants, species that have evolved under Wisconsin's environmental conditions, and once established, can be easily maintained for a long time (>50 years). I report here on establishment techniques that I have developed for native wetland plants on organic soils in southern Wisconsin.

Wetlands on state wildlife areas vary from native plant communities that have been slightly disturbed to extensive tracts of organic soils that were once drained and cropped. Drained wetlands are often undependable for agriculture because of imperfect drainage, vulnerability to late spring or early fall frost, susceptibility to severe wind erosion in dry seasons, inaccessibility, and lack of fertility, especially phosphorous and potassium.

Bluejoint Grass

Abandoned organic soils revert to grasses, forbs, or woody species within 3 to 5 years after cropping. These species may exist for 5-30 years. Annuals rarely persist for more than several years, except for giant ragweed. Species dominance and the rate of succession or degree of stability may vary between sites. Grass and forb species consisting of canary grass, aster-goldenrod complex, or stinging nettle often constitute the dominant perennial species.

Selected Test Species

I tested the following species for reseeding disturbed wetlands: bluejoint grass, cordgrass, tussock sedge, joe-pye weed, and meadowrue. My criteria for selecting these species included adaptation to wet, poorly drained soils; a minimum height of 2 feet at maturity; sufficient stem rigidity to withstand Wisconsin snow cover; moderate persistence once established; and ability to achieve dominance or high frequency in their natural, undisturbed communities.

Although the selected species are common, commercial seed sources do not exist and mature seed must be hand collected from native stands. Seed collection periods vary with species: bluejoint grass from 1-15 July; cordgrass from 20 September-5 October; tussock sedge from 15 June-5 July; joe-pye weed from 10-25 September; and meadowrue from 10-25 July

The seed of these plants is difficult to strip and the most efficient method is to clip the seed heads and store them in gunnysacks. Large quantities of sedge and bluejoint seed heads should be spread out in a dry, protected, well-ventilated building to reduce the moisture content before storage.

An alternative to seeding is to transplant short rhizomes or small pieces of sod. Neither method has been tested extensively, but transplanting dormant rhizomes of cordgrass and phragmites, as well as sodplugs of bluejoint grass grown in nurseries, has been successful.

Sodplugs and rootstocks should be collected only during dormancy in late fall or early spring. After uprooting clones of cordgrass, cut short pieces of rhizomes 5-9 inches long and include 2-4 nodes. Bluejoint grass produces a fine, dense root system and 3-4 inch plugs can be cut from the sod. Harvested rhizomes and sodplugs must be stored promptly in plastic bags, mixed with moist sphagnum moss to maintain uniform moisture, and refrigerated at 32-35 F until ready for transplanting.

Site Preparation

Disturbed wetlands are rapidly invaded by undesirable vegetation, requiring control before native species can be reestablished. The options available are: burning, tillage, deep plowing, herbicides or a combination of these. Residual cover and duff accumulation should be burned before tillage. A clean surface facilitates and increases the efficiency of operations.

Summer fallowing, including tillage at 3-week intervals during the summer before planting, should destroy most perennial plants and germinating perennial seeds. Frequency of tillage varies with fields, but I recommend 4-6 tillage operations during the growing season. Fallowing for 1 season can be effective when properly timed with seedling development and recovery of perennial root stocks.

Many of our virgin wetlands were converted to agricultural lands with a break plow, a large

moldboard plow capable of turning over sod 10-14 inches deep. Where available, this equipment is an alternative to other site preparation methods. Most importantly, herbicides are not needed to kill the vegetation. Plowing reduces the recovery of perennial rootstocks and also places dormant weed seeds at a depth where germination is unlikely. Tall, dense wetland vegetation of late spring or summer should be mowed or chopped before plowing.

Eradicating wetland vegetation by tilling leaves the soil too rough and uneven to seed directly. Disking will break up clods and level the surface enough to seed. Avoid overworking organic soils however, because this will produce fine, soft-textured seed beds vulnerable to wind erosion. Create coarse seed beds that provide wind resistance and trap broadcasted seeds where microenvironments favor germination and establishment.

The most cost-effective method of controlling undesirable wetland vegetation is the use of nonselective, contact herbicides. Perennial grasses can be treated in the spring or in September, while perennial forbs at full bloom are most susceptible to herbicides.

Cordgrass

The timing of a herbicide application is determined by the dominant plants present. Spring or fall herbicides are applied when the new growth of grasses reach the third or fourth leaf stage, or about 8-12 inches tall. A water volume of 10-20 gal/acre will cover all vegetation. I prefer the herbicide Roundup® because it is nonselective, highly effective, breaks down rapidly, and any species can be reseeded 7 days after application. Apply Roundup at 2 qts/acre. Broadleaf weeds are also controlled with Banvel® or Banvel plus 2,4-D ; however, replanting efforts must be delayed if Banvel is used.

A mid-September application of Roundup is an acceptable alternative to spring treatment for canary and other cool season grasses. Residual cover and spring growth must be removed to assure exposure of the growing vegetation to the herbicide. Spraying on a warm, bright day will enhance the herbicide activity and improve translocation.

Fields treated with herbicides may provide suitable seed beds without further tillage if at least 25% of the surface is free of residual cover. Dead root systems secure the soil and maintain a more uniform soil moisture. However, a potential problem with this method is the presence of dormant annual weed seeds that will germinate once the existing cover is destroyed.

Seeding and Transplanting

Unfortunately, no mechanical procedures have been developed for separating the seed of the test species from their seed heads, or for mechanical planting. In addition to hand collecting the seed, hand broadcasting is also necessary. Bluejoint seed is minute and a hand lens is required to determine the presence of viable

seeds. Crushed panicles of bluejoint seed must be spread as evenly as possible over a prepared seed bed. In mixed plantings, the seeds of several species are combined. Flowering heads of meadowrue, tussock sedge, and joe-pye weed should be crushed and shredded to assure ease of handling and reasonable distribution. Cordgrass seed will shed naturally from the panicle when dried. I suggest a seeding rate of 20-25 lbs/acre if a mixture includes the entire seed head. Grasses and sedges should constitute at least 65% of the weight of the mixture.

Seed should be planted as early as possible in the spring. Bluejoint grass and tussock sedge can be seeded in August, because their seeds germinate within weeks after ripening in July. I recommend a light harrowing after broadcasting to cover the seed. Because the seed is small, it should be covered with a fine layer of soil. Using a roller packer over the seeds is also beneficial.

Transplanted rhizomes or sodplugs should be set 1-2 inches deep and spaced 24 inches apart within and between rows. Soil should be tamped to reduce air pockets and assure good soil-root contact.

Stand Management

Native grass and forb seedlings grow slowly during their first year and require 3-4 growing seasons to achieve maximum development. If the weed population is suppressed before seeding, further control may not be necessary. If weed growth becomes severe and covers the seedlings, the competition must be reduced. I recommend a 25% solution of Roundup applied with a wick applicator or mowing at a height of 8-10 inches. Fields should be checked often in mid-summer to determine seedling development and weed growth.

Eugene E. Woehler retired recently after 36 years as a wildlife research biologist for the Wisconsin Department of Natural Resources. He is known for his work on habitat management, prairie restoration, and pheasant propagation.

Edited by Stefanie Brouwer

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