



## **Duck's Unlimited Canada's Prairie CARE Program**

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Duck's Unlimited Canada (DUC) is a private, non-profit conservation organization. It has been involved with waterfowl habitat restoration since organization in the 1930's. In addition to long-term involvement in wetland restoration and management, DUC has recently given more attention to upland restoration and management. DUC's current habitat programs are guided by a 1994 Continental Conservation Plan, which was developed by biologists in Canada, the United States and Mexico with an objective of restoring waterfowl populations to average levels of the 1970s. That plan analyzed the needs and status of North American waterfowl, and provided direction and recommendations for the areas on which DUC should focus to provide the most benefit to increasing and sustaining waterfowl populations (DUC, 1999).

Even before the Continental Conservation Plan was developed, DUC recognized that the prairie provinces of Canada (Manitoba, Saskatchewan and Alberta) are the major breeding grounds for a large portion of North America's waterfowl population. DUC developed a program called Prairie CARE (Conservation of Agriculture, Resources and Environment) to address the needs of waterfowl populations. This program focuses on restoring and protecting nesting cover in areas where there are a relatively high number of wetlands.

Prairie CARE is Ducks Unlimited Canada's largest habitat program. Restoration and reclamation activities are only one part of the Prairie CARE program. On an acreage basis, restoration work is one of the smaller aspects of the total program, although it does affect a significant area. Other components of the Prairie CARE program include grazing systems, extension programs, winter cereal programs, and forage production programs (DUC Fact Sheet, 1998). Prairie CARE promotes the restoration and improvement of upland cover in areas of high wetland density and high waterfowl breeding population. It aims to increase waterfowl nesting success by providing increased nesting cover and protection from predation. DUC has become the leading Canadian Agency in the restoration and reclamation of land through the use of native plant material (DUC, 1999).

### Manitoba's Prairie CARE Program

Much of DUC's Prairie CARE program is focused in Manitoba. When the glaciers retreated thousands of years ago, the Manitoba landscape was left with a multitude of wetlands. Over time, however, more than 70% of the original prairie wetlands have been lost to drought and agricultural development, which has greatly affected the populations of waterfowl. In Manitoba from 1990 to 1997, the Prairie CARE program was implemented on a total of 379,142 acres by enacting agreements with individual landowners. The majority of those acres (265,396) were involved agricultural demonstration programs intended to educate landowners in areas such as conservation tillage and no-till techniques to improve surface cover conditions on annual

cropland. However, 113,746 acres were secured in programs which focus more directly on improving wildlife habitat by converting lands to prairie (Poole, 1999).

### How Land Becomes Part of Prairie CARE

Prairie CARE targets lands that have a high capability for waterfowl habitat, which typically means lands with relatively high numbers of wetlands in rolling topography. Prairie CARE has two avenues for reaching its goals of increasing habitat for waterfowl: land lease and land purchase programs. In both programs, previously cultivated acres are converted to perennial cover and managed primarily as nesting cover. Where consistent with waterfowl management objectives, agricultural use, usually haying, is allowed.

On leased lands, perennial cover is established to provide soil and water conservation benefits as well as improved nesting conditions for waterfowl. Annual lease payments are based on the production value of the land. Landowners are paid for upland acres only (which could otherwise be producing an agricultural crop), and if consistent with waterfowl management objectives, agricultural use is allowed (DUC, 1998). Leased plantings are considered short term and are typically seeded to an introduced species mix, which usually contains species such as slender wheatgrass (*Agropyron subsecundum*), tall wheatgrass (*Agropyron elongatum*), intermediate wheatgrass (*Agropyron intermedium*), pubescent wheatgrass (*Agropyron trachycaulum*) and alfalfa (*Medicago sativa*). DUC uses introduced grass and legume species on these short-term plantings because the higher cost of native seed is not considered a reasonable investment. In the period from 1990 to 1997, DUC in Manitoba seeded about 30,000 acres of leased land with introduced species mix.

Prairie CARE also purchases available lands that have a high capability for waterfowl habitat from willing sellers. The purchase price is based on an independent appraisal of the property. Purchased land is seeded for long term habitat with grass mixtures native to the area. DUC bases its selection of plant species on a combination of criteria including the nature of the land base, purpose of the seeding, likely management regimes, seed availability, seed costs, longevity, ease of stand establishments and the attributes of available plant species (Wright 1994). Depending on the location of the land, typical native plant mixtures include needlegrass (*Nassella viridula*), northern wheatgrass (*Agropyron dasystachyum*), western wheatgrass (*Agropyron smithii*), plains rough fescue (*Festuca hallii*), needle-and-thread (*Stipa comata*), Canada wildrye (*Elymus canadensis*), porcupine grass (*Stipa spartea*) and June grass (*Koeleria gracilis*). In the eastern prairies where tall warm season grasses historically dominated, species such as big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*) and switchgrass (*Panicum virgatum*) are used. From 1990 to 1997, almost 20,000 acres of land was purchased by DUC and seeded with native species.

Often DUC selects sites that have existing wetlands and then restores nesting cover around them. Because of costs involved, DU does not normally consider dredging out old wetlands that have been filled in by agricultural silting. However, in cases where wetlands had been drained and farmed through, DUC will block the drains with simple earthen plugs that are very effective at restoring the previous wetlands at minimal cost—often for as little as \$200 or \$300 each (Poole, 1999).

## DUC's Restoration Approaches

DUC's goal is to provide habitat for waterfowl, not to replicate the prairie that was present prior to agricultural use. A prairie restoration involves the planting of a diverse mix of species native to that particular area, with the seed collected as close as possible to the planting site (Morgan, 1995). In long-term plantings on purchased lands, DUC uses native plants to produce a rough approximation of the natural prairie. This approach was developed by DUC in conjunction with USDA Natural Resources Conservation Service personnel (DUC, 1996). In long-term plantings on purchased lands, DUC uses native plants to create a persistent stand that is suited to the extremes of climate in the specific area. However, seed sources are not always local and species composition is geared toward waterfowl habitat, rather than reproduction of pre-agricultural conditions.

DUC assesses each new site individually to determine the best approach to restoration. (Poole, April 1999). Sedivec et al. (1991) use the term "range site" to refer to an area of land with certain physical characteristics which determine the plant community present. Major range site factors influencing plant species composition and biomass production include topsoil depth, soil texture, available soil moisture, land slope and exposure, precipitation and soil fertility. (Sedivec et al. 1991). DUC analyzes range site factors and uses an approach known as "sculptured seeding" (Jacobson et al. 1994), which attempts to match plant species with the site conditions under which they are known to persist in different regions of prairies. For example, a wetland area could consist of regions such as meadow, low prairie, mid prairie, and high prairie. Seed mixtures are developed to match soil and climatic conditions, not only within a region but within a specific field. Because the Canadian prairies are an agricultural region, species like blue grama (*Bouteloua gracilis*) are often used in mixes for eroded knolls, even though that species does not provide excellent nesting cover for waterfowl. It may, however, provide some habitat benefit for grassland songbirds. DU does not attempt to restore those eroded knolls to what would have been present in the native prairie prior to being used for agriculture, because the soil has changed so drastically (Poole, 1999).

DUC would like to use more native plants in restorations, because use of native plant material minimizes future management costs. However, there is not enough native seed available commercially for all of DUC's restorations. To increase seed availability, DU has their own "ecovar:" program to develop seed sources for species that are not commercially available in large quantities. An "ecovar" (ecological variety) is a selection that is developed with equal emphasis on maintenance of a broad genetic base and agronomic characteristics. It differs from a "cultivar" (cultivated variety) which is rigidly selected for uniformity of agronomic characteristics. Ecovars have a broader range of genetic potential of the species retained, and will yield seed that is closer to its native origin than cultivars. The ecovar program began with grass development, and is now, with financial help from Monsanto Canada Inc., expanding to native shrubs, flowers and forbs. Ecovars will be grown so that seed can be harvested in large quantities for use in restoration plantings. Having more species of native plants, especially forbs, available to include in DUC's seed mixes, even if included in small quantities, will allow restorations to more closely resemble pre-agricultural prairies. According to Morgan (1995), it is more important to have at least a small amount of the right native species in the mix, even if it is not exactly the right amount of any particular species.

DUC has used mostly grasses in restorations, though some forbs, principally purple prairie clover (*Petalostemon purpureum*) and Maximilian sunflower (*Helianthus maximilianii*), have been included in mixes because seed of them is usually available in quantity. DUC uses herbicides as required for control of weeds which creates some limits to the amount of forb planting they undertake. DUC tries to control weeds in restorations by using herbicides and plowing during site preparation to eliminate all vegetation prior to planting. Since forbs are usually killed by broadleaf herbicides, DUC often does not add forbs to an area until several years following seeding of a site with grasses. In this way, herbicides can be used for a few years to eliminate persistent weeds such as Canada thistle (*Cirsium arvense*). According to Poole (April 1999), many forb species will reappear in established stands of native grasses when the land is no longer subject to annual agricultural use.

### Aftercare

Once planted, sites are maintained with a combination of herbicides, mowing, grazing and fire. According to Poole, there are a very small number of herbicides that are registered for weed control in grasses. DUC has worked with others, including some of the weed scientists with the Canadian agricultural department, to get "minor use registration" for some herbicides (Poole, April 1999). The ability to control weeds with herbicides if required is important to the restoration/reclamation efforts because of the size of most of the plantings. They are too large to manually remove weeds during stand establishment. In addition to weed pests, grasshopper control is often an issue, as damage by grasshoppers can be a major cause of grass stand establishment failure (DUC, 1996). Mowing and grazing can provide many of the same benefits as burning, and haying is often allowed on both leased and purchased sites. All management techniques are timed to have minimal interference with wildlife.

Establishing a successful prairie restoration project is a long-term commitment of time and resources. From the point in time when seeds are sown it will likely be 5 years before a site approaches its intended appearance in the tall grass prairie region, and 10 or more years in the drier mixed grass prairies (Morgan 1995).

### DUC's Results

DUC's main measure of success of its programs is simply the establishment of cover. According to Poole, DUC has experienced virtually a 100% success rate in their plantings of leased and purchased land. On rare occasions, they have had to do a minimal amount of spot re-seeding because of drowned out spots since they select land parcels with wetlands in rolling topography.

The Institute for Wetland and Waterfowl Research (IWWR) has been evaluating the waterfowl production effectiveness of the various programs DUC offers for several years. They have also begun to monitor the use of land enrolled in DUC programs by other wildlife species. The IWWR has found that since DUC intentionally selects land parcels for both their lease and purchase programs which have rolling topography, wetlands and usually some shrubs and trees, waterfowl are naturally attracted to those sites as soon as the cultivated land is converted from annual crops to perennial cover and the amount of disturbance on the parcel is reduced. Depending on the management activities taking place on an individual parcel in any given year,

the wildlife numbers may vary from year to year, but they are virtually always greater than the numbers before the cultivated land was converted (Poole, April 1999).

### Conclusion

DUC has increased habitat for waterfowl across the Canadian prairies through its Prairie CARE program. In addition to providing waterfowl habitat, however, more focus should be given to restoring each site to its pre-agricultural condition. The program could be improved with more investigation and attention to what originally existed naturally at each site. Even though waterfowl, the main interest of DUC, may not need many of the native forbs for habitat, any restoration effort should attempt to recreate the native conditions. DUC's ecovar program should improve the species composition of restorations, but to do this it will have to be extensive enough to provide enough seed of native plants. Once native seed availability is adequate, DUC should consider planting natives on leased lands as well as purchased lands. This will avoid creating seed sources for non-natives that can colonize other areas.

More effort should be given toward measuring the success of DUC restorations. While any establishment of cover is useful to control erosion, DUC should evaluate each planting to determine if the species composition is as planned, and if those species are providing the best habitat for waterfowl and other wildlife. Waterfowl and other wildlife should be monitored more closely both before and after a restoration to determine if the restoration sites are providing the intended habitat, and what the true increase in waterfowl populations are. Other native wildlife should also be monitored and restoration sites should be managed to provide for their needs.

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