

WATER FOR AGRICULTURE AND WATERFOWL

Paul M. Bultsma¹

ABSTRACT

Waterfowl need a variety of wetland types along with secure uplands to successfully complete their annual life cycle. This production habitat is used on the Northern Great Plains primarily during the spring and summer seasons. Ducks Unlimited, Inc. (DU) creates and restores various types of wetland habitat for waterfowl depending on the unique characteristics and opportunities provided by the landscape. Diversions from irrigation channels and return flows from irrigated fields are used by DU whenever possible to provide water for developed or created wetland habitat.

DU has completed over 600 projects out of its Great Plains Regional Office since it opened in 1984. In total over 82,000 surface acres of wetland habitat have been restored, created, or enhanced. All of those projects have benefited waterfowl and many other wildlife species, and most of those projects have also provided benefits to other special interest groups. Hay production, livestock grazing, sediment control, domestic water, irrigation, ground-water recharge, and flood control are some of the other benefactors of DU projects.

DU seeks to provide for the habitat needs of waterfowl and at the same time provide benefits to both public and private landowners. It is important to have wildlife habitat developments that are compatible with profitable and sustainable agriculture.

INTRODUCTION

DU is a private, not-for-profit conservation organization whose mission is to help fulfill the annual life cycle needs of North American waterfowl. DU believes that waterfowl conservation must focus on the protection and restoration of ecologically functional habitat complexes or systems, and has designed its programs accordingly. The function of DU's Great Plains Regional Office (GPRO) is to protect, enhance, and restore waterfowl habitat in the Northern Great Plains where a significant number of waterfowl nest during the spring and summer months. The GPRO staff develops habitat in 9 states. Since 1984, over 600 projects have been completed involving over 82,000 acres. The types of

¹Regional Biologist, Ducks Unlimited, Inc., 3502 Franklin Ave., Bismarck, ND 58501

habitat projects developed vary significantly from state to state as well as within portions of states. The goal is to address the factors limiting waterfowl in any particular habitat complex.

DUCK BIOLOGY

After spending the winter months on wetlands and in flooded grain stubble fields in the southern part of the United States, ducks begin their spring migration back to the breeding grounds on the Northern Great Plains. The birds generally begin to arrive in late March as breeding pairs, and almost immediately commence breeding activity. They quickly search out shallow wetlands that provide ducks the critical territorial space and food resources they need to sustain them through the nesting season. These small wetlands, called breeding pair ponds, warm quickly providing a nutritious bloom of invertebrates required for the special rigors of egg production and incubation. Although many of these wetlands may be considered a nuisance to farming operations, they are vital to fulfilling the life cycle needs of ducks and other migratory birds. A breeding pair pond can be as small as a fraction of an acre in size, and have only a few inches of water in it. Some disappear several days or a few weeks after the soil is frost-free and are called temporary ponds. Other breeding pair ponds may contain water until early to mid-June, and are called seasonal wetlands. In all cases these wetlands fulfill a critical function in the life cycle of waterfowl and other water birds.

The second phase of duck production on the prairies begins with the initiation of active nest building. This may start for some species as early as mid-April. Nesting activity continues throughout the spring with hatching occurring through late July. Although some ducks may continue to use wetlands during the nesting period, the actual nesting sites for most species of waterfowl are located on the uplands. It is during this period of time that female ducks, in addition to their eggs and young, are extremely vulnerable to destruction from a variety of predators that destroy nests and sometimes kill the hen. Red fox are especially noted for killing nesting ducks. The hen and her nest are also vulnerable to the many agricultural activities and other uses that may be occurring on the landscape during this time period.

The third phase of duck production is brood rearing. This generally occurs on large, semi-permanent wetlands that have a mixture of emergent and submergent vegetation, along with open water areas. These tend to be larger and deeper wetlands, being up to several hundred surface acres in size. The water depth may exceed 6 feet or more, and will usually last through the summer months until after the young waterfowl are fully fledged. These hemi-marsh wetlands provide the security and food resources necessary for broods to grow and gain flight for the

fall migration. These wetlands usually have other societal values in addition to the habitat provided for waterfowl.

Knowledge of these three phases of basic duck biology, and how this process fits with agricultural practices and other uses on the Northern Great Plains landscape, is important. Understanding both the waterfowl and agriculture cycle enables DU and similar conservation interests to encourage and participate in win-win practices for both agriculture and waterfowl.

BREEDING PAIR PONDS

Pair ponds are developed to attract breeding waterfowl to a landscape that already has good brood-rearing habitat and upland nesting cover. Breeding pairs are often quite territorial during the breeding season. Increasing the number of individual wetlands and surface acres of water, increases the number of breeding pair territories a particular landscape can support. Adding ponds to large grass covered landscapes can significantly increase the number of breeding pairs using that habitat for production. Breeding pairs attracted to a particular landscape by these small ponds subsequently nest in the surrounding upland habitat and when their eggs hatch, hens seek out the available brood habitat in that area.

Pit retention dams and spreader dike systems are often appropriate for breeding pair habitat in areas west of the Missouri River in the Great Plains States. They are generally only constructed where there is readily available brood habitat, and most are on privately owned land.

Pit retention dams with several surface acres can be built with earthen embankments that extend across natural water ways. These created wetlands are limited to watersheds of only a few hundred acres. Natural spillways must exist to accommodate larger precipitation events. These ponds are usually quite shallow, at least at the upper end. In addition to duck use, these small ponds may be designed to benefit the livestock interests also using the same landscape. Ponds can be built with a pit that will store livestock water through summer months most years. This water is available to grazing livestock as they rotate through the pastures, generally having little impact on the waterfowl in the area.

Other types of breeding pair habitat include spreader dike systems. This type of wetland usually has a larger surface area than the pit retention dams. The water depth is shallow and is highly attractive to breeding waterfowl. The spreader dikes are generally located below reservoirs which can often provide the needed brood-rearing habitat late in the summer. The spreader dike systems should be flooded early in the spring to attain the maximum surface acreage and attract the

greatest number of breeding waterfowl pairs. These systems are often designed with water control structures so the cells of water can be drawn down in June to stimulate forage production which can be hayed or grazed by livestock. The spring flooding or irrigation enhances forage production.

Another method for development of breeding pair habitat is to restore small wetlands that have been drained in the prairie pothole region east of the Missouri River. The Conservation Reserve Program (CRP) provided a number of opportunities for restoration of natural basins on previously farmed land. These restorations have been quite simple to construct with only a small amount of soil needed to plug the channels and complete the projects. Landowners with CRP contracts have already agreed to a 10-year period of non-agricultural use of the land, therefore restoring the wetlands has not been in conflict with any agricultural practice.

Similar opportunities exist for landowners entering or returning to livestock production, or those in need of more forage production for their existing livestock enterprises. DU has assisted some landowners who had drained wetlands by plugging the drains and installing water control structures at the same time. The water control structures are closed during the early spring period to create shallow water which functions as territorial space for breeding pairs. After most of the breeding pair activity is completed in June, the water control structures can be opened and the water drained from the wetland. This often amounts to irrigated forage production for the landowner which can be grazed or used for hay production. This type of project is generally only developed where there is adequate secure upland cover for successful nesting and semi-permanent water for brood rearing habitat in the immediate vicinity.

In all of the these examples private landowners experience some type of direct benefit from the presence of the wetland. Those values include:

- (1) Water for livestock
- (2) Forage for livestock
- (3) Drought insurance for livestock operations
- (4) Groundwater recharge
- (5) Floodwater retention

DU has participated in other types of wetland development for breeding pairs on public land. These developments involve the creation of wetlands with shallow water habitat in the tributaries above large reservoirs. In these cases the wetlands have been useful to waterfowl and also have reduced the sediment reaching the downstream reservoir. As the water passes through the wetland the water velocity slows and the sediment drops out of the water. Clean water then proceeds downstream to the reservoir, extending its life.

UPLAND NESTING HABITAT

Tall, dense vegetative cover on the uplands up to a mile away from water can serve as nesting habitat for waterfowl. The CRP acres have been particularly beneficial to nesting waterfowl and other ground nesting birds. The use of rotation grazing systems, grass plantings, conservation tillage, winter cereal crops, and other activities that increase the height and density of vegetative cover on the land will generally benefit nesting waterfowl. The critical time for having this cover on the land is generally from the middle of April through the middle of July. DU is actively working with private landowners to help establish these practices that benefit not only waterfowl but also provide some value to the landowner.

BROOD REARING PONDS

Waterfowl brood rearing wetlands are normally deeper in water depth and often larger in size than are breeding pair ponds. DU has developed several hundred of these on both public and private land. They are generally developed in areas with expansive grassland habitat but often relatively vacant of breeding waterfowl due to lack of ponded water. Brood ponds should provide a reliable source of water until after the brood rearing season. The typical brood wetland has a natural watershed of several thousand acres, or an irrigation water source to insure an adequate water supply for the waterfowl breeding season. Many wetlands of this type are developed in Montana, Wyoming, and the western Dakotas.

The typical site is relatively flat which optimizes the number of water surface acres for the costs involved. An earthen embankment is constructed across a natural constriction in the drainage system to impound the runoff. A primary water control structure is often placed in the embankment to handle frequent, small precipitation events and excavated emergency spillways are generally designed to handle the larger, less frequent events in combination with the primary spillways.

The shallow, upstream portions of these ponds provide the mixture of aquatic vegetation and invertebrates needed by rapidly growing waterfowl broods. The objective is to have 50% of the pond surface covered with emergent vegetation interspersed throughout the wetland. That interspersed vegetation is generally not present until after the created wetland has been in existence for several years.

The agricultural value of these wetlands is generally related to the livestock water they provide. The climate on the Northern Great Plains is semi-arid, so water sources for livestock are a welcome addition to the landscape.

Some brood wetlands are built in areas where irrigation return flow water is available from agricultural fields above the wetland. These sites are particularly attractive in the dryer climates of Montana and Wyoming. The irrigation return flows can be a more reliable source of water than is often available from natural runoff. Irrigation water can also be regulated or controlled better than natural runoff. The control can be a benefit in managing the vegetation in the wetland basin.

SUMMARY

DU has been successful in identifying numerous ways to develop habitat that benefits waterfowl and at the same time help the landowner and general public. DU will continue to seek partners and find ways that provide habitat for wildlife, and benefit the environment and agriculture.