

**Natural Resources Conservation Service
Conservation Practice Standard**

**SHALLOW WATER MANAGEMENT FOR WILDLIFE
(Ac.)
CODE 646**

DEFINITION

Managing shallow water on agricultural lands and moist soil areas for wildlife habitat.

PURPOSE

- To provide open water areas on agricultural fields and moist soil areas to facilitate waterfowl resting and feeding.
- To provide habitat for reptiles and amphibians and other aquatic species which serve as important prey species for waterfowl, raptors, herons, and other wildlife.

CONDITIONS WHERE PRACTICE APPLIES

On agricultural and moist soil areas where water can be impounded or regulated by disking, flooding, or other water control structures or measures.

This practice can be used to facilitate the conservation of declining wetland dependent and threatened and endangered species.

This practice does not apply to: Wetland Restoration (657) intended to rehabilitate a degraded wetland where the soils, hydrology, vegetative community, and biological habitat are returned to original conditions; Wetland Enhancement (659) intended to rehabilitate a degraded wetland where specific functions and/or values are enhanced beyond original conditions; or Wetland Creation (658) for creating a wetland on a site location which historically was not a wetland or on a site which was formerly a wetland but will be replaced with a wetland type not naturally occurring on the site.

CRITERIA

- Soils should have low permeability to inhibit subsurface drainage and allow for maintenance of proper water levels.
- Shallow water impoundments require an adequate water supply for flooding and a water control structure for removing water when necessary.
- Landowner shall obtain all local, state, and federal permits necessary.
- If pumping from a stream, water rights must be assured.
- The Standards and Specifications for Dike (356), Pumping Plant for Water Control (533), and Structure for Water Control (587) will be used as appropriate. Refer to Chapter 6, "Structures," of Part 650 in the National Engineering Handbook for additional design information. Existing drainage systems will be utilized, removed, or modified as needed to achieve the intended purpose.

CONSIDERATIONS

To insure that foods are available to dabbling ducks, shore birds, wading birds, and other species such as frogs, impoundments should be gradually flooded to a depth of 6 - 18 inches. Other wetland wildlife may require water of varying depths but most shallow water areas should provide water depths to meet these needs. Wetland wildlife require several types of habitats and foods to meet their behavioral and nutritional needs. Habitat diversity is the key. Small-grain producing cropland, grass-weedy areas with a diversity of water depths (moist soil areas), and forested wetlands provide this needed diversity. Since continuous disturbance adversely affects most wetland wildlife, at least 25 percent of the area should be utilized as sanctuary. Using forested wetlands as sanctuary areas is a good way to develop resting and feeding habitats.

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

Habitat Management

Although shallow water wetland systems are among the most productive ecosystems in terms of total biomass, few wetland dependent species, especially bird species, obtain substantial energy or nutritional resources directly from plant material consumption other than seeds. Much of the energy from plants is transferred to a diverse group of invertebrate species. Therefore, invertebrates provide a very important part of many bird's total dietary needs. Managing water levels not only directly affect invertebrates populations but also indirectly other wetland species through modifications of aquatic plant communities. Varying water levels influences germination, seed or tuber production and maturation and plant structure.

Agricultural Fields

Small grain fields such as rice can provide important habitat for waterfowl and other wildlife. It is estimated that per acre; 150+ pounds of rice, 50+ pounds of soybeans, 180+ pounds of corn, and 130+ pounds of grain sorghum are lost during harvest. These fields can provide substantial food resources if they are not plowed under after harvest and shallowly flooded.

Rice fields are among the most economical areas to manage for waterfowl, shore birds, and wading birds, because the existing levees and structures can be used, and the stubble can be lightly disked, rolled, or water buffaloed prior to flooding. The procedure of manipulating rice stubble prior to flooding aids in decomposition, which increases invertebrate populations. Not only does this enhance the area for wildlife, but also results in fields that are cleaner when the water is draining in the spring for seedbed preparation. Waterfowl feeding in rice fields also reduce the occurrence of red rice (*Oryza sativa*) and other weeds for the following production cycle.

Small grains decompose at varying rates when flooded. Rice, grain sorghum, and corn persist for extended periods but soybeans deteriorate rapidly. At least 10% of the area should be flooded in August to mid September to a depth of 2-6 inches to provide habitats for early migrants such as teal.

Waterfowl and other water birds benefit most when water levels are increased gradually rather than immediately inundating the entire area. By increasing water levels in 6 inch increments, new areas are flooded and additional food sources gradually become available. This

procedure conserves food for later in winter and provides a range of water depths, which benefits a wider array of wildlife.

Fields should be completely flooded by December 15 and maintained until the following year just prior to seedbed preparation. When dewatering the area, it should be completed gradually (6 inch increments) to concentrate invertebrate food sources.

Moist Soil Areas

Moist soil areas are important because of the great diversity of foods. In addition, seasonally flooded moist soil areas tend to support greater density of invertebrates than do habitats that are permanently flooded. Important factors when managing moist soil areas are the timing of the annual drawdown, and the frequency of soil disturbance to alter plant succession.

Mid to late season drawdowns generally favor millets and other grasses preferred by waterfowl. However, total seed production is generally greater when impoundments are drained early to mid season. Early drawdowns occur within the first 45 days of the growing season, mid-season drawdowns occur within the second 45 days of the growing season, and late season drawdowns occur within the remainder of the growing season.

While slow drawdowns typically produce diverse vegetative cover, fast (less than 2 weeks) drawdowns are more likely to result in a stand of similar vegetation. To maximize benefits, areas should be drained at varying times and rates.

For maximum seed production, native plant communities must be maintained in an early successional stage. The percentage of non-food producing plant species generally tends to increase in each consecutive year the area is not disturbed. Soil disturbance greatly affects the response of native plants to different management techniques. Impoundments should be disked at 2-3 year intervals to set back succession and control the invasion of undesirable plants. Vegetative succession manipulations should not be done more frequently than every two years unless undesirable plants cause a problem.

Disturbances every year have the potential to reduce beneficial plant communities. Plants such as cocklebur and coffeeweed can quickly develop a closed canopy and outcompete desirable plants. If undesirable plants invade 50% or more of the managed area, control by

either approved herbicides, disking, shredding, flooding, and/or prescribed burning.

Food Plantings

Fields can be planted with small grains such as Japanese millet, browntop millet, corn, and rice. These plants typically produce high yields of seed and are eaten by many birds and waterfowl. Soybeans are not recommended for use in shallow water because they deteriorate quickly once flooded. Consult applicable NRCS conservation practice standards, technical notes, and job sheets for seeding rates, planting dates, and management practices.

Consider the effects of the timing of the flooding and drawdown, as well as the type of drawdown, on plant species composition (moist soil areas).

Consider the species flooding tolerances and the composition of seed in the soil at the site (moist soil areas).

Consider effects on wetlands or wildlife habitats that would be associated with the practice.

Consider the effects of residual herbicides (moist soil areas).

Consider the targeted plant species' tolerances with respect to timing and type of drawdown.

Consider effects on movement of dissolved substances to groundwater and to downstream surface waters.

Consider effects on downstream flows that would affect other water uses or users.

PLANS AND SPECIFICATIONS

Plans and specifications for installing structures for water control shall be in keeping with this standard and shall prescribe the requirements for applying the practice to achieve its intended purpose.

Plans and specifications for this practice shall be prepared for each site. Plans and specifications shall be recorded using approved specifications sheets, technical notes, job sheets, or narrative documentation in the conservation plan or other acceptable documentation. Contact an NRCS biologist for assistance.

OPERATION AND MAINTENANCE

The impoundment on moist soil areas should be dewatered and disked or burned at 2 to 3 year intervals to control the invasion by undesirable plants.

The following actions shall be carried out to insure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance).

Any use of fertilizers, mechanical treatments, prescribed burning, pesticides and other chemicals to assure the shallow water or moist soil area function shall not compromise the intended purpose.

Operation and maintenance shall include monitoring and management of the site. Structures will be maintained according to NRCS standards and specifications.

REFERENCES

1993. Ducks Unlimited, Inc. Waterfowl Habitat Management Handbook for the Lower Mississippi River Valley. Publication 1864. Ducks Unlimited, Inc. , Mississippi Cooperative Extension Service, National Fish and Wildlife Foundation.