Shallow Water Management for Wildlife

Job Sheet

Natural Resources Conservation Service (NRCS)
Missouri Department of Conservation (MDC)
University of Missouri Extension – The School of Natural Resources

For:	**County:**
Field(s):	**Farm #:**
Date:	**Tract #:**
Designed By:	**Contact Information:**

WHAT IS SHALLOW WATER MANAGEMENT FOR WILDLIFE?

Managing shallow water on agricultural fields and moist soil areas can provide open water areas for waterfowl resting and feeding. Proper management can increase and maintain desirable foods for waterfowl and other species of wildlife.

Shallow water areas are typically flooded during the winter and then drained or dried during the spring or summer to promote the growth of desirable native food plants or to plant crops that will benefit wildlife. After the seed-producing plants have matured, and during the fall waterfowl migration, the area is allowed to flood with an average depth of 6 inches of water. The flooded food plants provide excellent resting and feeding areas for "puddle ducks" that "tip" to feed, like mallard, shoveler, pintail, and teal.

Canada geese will also feed in shallow water areas within their wintering range. In the spring, during a slow draw down, shallow water areas are especially beneficial for shorebirds, like plovers and sandpipers, on their northward migration.

VEGETATION MANAGEMENT

There are three basic ways to provide quality wildlife foods through vegetation management. They are 1) natural moist-soil plants, 2) planting a crop for wildlife and 3) managing crop residue. Advantages of moist soil management over planting crops are:

- Management costs are less;
- Attracts greater diversity of wildlife;
- Provides foods with greater nutrient value;
- Possible on marginal row crop sites;
- Production less influenced by weather;
- Propagates naturally occurring and preferred foods like smartweeds, sedges, and millets.

Advantages of planting crops are:

- Total energy production can be higher;
- Does not require as precise water control;
- Easier to control undesirable plant species;
- Certain crops (corn) are sought by late season migrating dabblers.

Each shallow water area may be managed using different methods in different years. In some cases, altering the type of management can facilitate maintenance and increase productivity and diversity of the site.

Natural moist-soil plants. Wild millet, rice cutgrass, nutgrasses, smartweeds, beggarticks, etc., can be encouraged, through water level manipulations, to germinate from existing seed sources in the soil. They produce an abundant source of high quality food for waterfowl.

Drawdown (dewatering) of the area is necessary for moist-soil plant production. Slow drawdowns (two to three weeks averaging an inch or less of water depth removed per day) usually are more desirable for plant establishment and wildlife use.

Early drawdowns are defined as occurring within the first 45 days of the growing season, and generally favor smartweeds, sedges and rice cutgrass. For southern Missouri early drawdowns take place April 1—May 15; north Missouri April 15—May 30.

Midseason drawdowns take place during the next 45 days of the season, and typically favor millets (barnyard grass), crabgrass and some beggarticks. In south Missouri, the standard timing for these drawdowns is May 15—July 1; May 30—July 15 for north Missouri.

Drawdowns completed after the first 90 days of the growing season are considered late. Vegetation response is usually dominated by beggarticks, sprangletop and crabgrass. For south Missouri, drawdowns after July 1 are considered to be late; after July 15 for north Missouri.

In general, early drawdowns and midseason drawdowns result in the greatest quantity of seeds produced.

Consider the species of seed that is likely to exist in the soil when determining the species of food plants you are going to manage. The species of seeds in the soil, the timing of the drawdown, as well as the type of drawdown, will determine plant species composition. In general, early slow drawdowns result in smartweeds and sedges, while midseason drawdowns produce millets and beggarticks.

The timing and extent of the drawdown should be varied from year to year to maintain productivity and a diverse plant community. Consider the reliability of fall water for reflooding and the importance of having at least some surface water during early migration when determining the extent of the drawdown.

Managed shallow water areas can be a very important source of food for shorebirds during their spring (and fall) migration. Shorebirds, like plovers and sandpipers, feed on mud flats and in very shallow water.

Undesirable species that should be controlled include cocklebur, reed canarygrass, phragmites (common reed), maidencane, cattail, woody vegetation, and all noxious weeds including purple loosestrife. Most other plants that volunteer will be readily utilized by waterfowl.

Control methods for undesirable species vary. If cocklebur volunteers, it can be controlled by a brief period of reflooding. Many other undesirable species, including tree seedlings can be controlled by combinations of mowing, burning or disking during the growing season, then flooding until the following spring. Herbicides may be an effective tool. Spot applications or treating small areas will limit the negative impacts on desirable annual plants.

It is best to dewater and disk the site every three years, or whenever perennial vegetation begins to dominate the wetland. Annual species have the highest seed production. Disking will maintain the site in early successional species (mostly annuals), and aid in the control of unwanted species.

Reflood wetlands slowly in the fall. Ideally, this is done to coincide with the arrival of fall migrant waterfowl. Flooding the site slowly (two-three weeks) allows new areas of food to become available each day at the preferred water depth as the water is rising. Food resources covered by more than six inches of water are generally unavailable to dabbling ducks.

Planting waterfowl food plants. Consider planting annual food in areas where plant succession has been set back by disking, or in areas with insufficient natural food production. Draw water off these areas in late spring and plant species such as browntop millet, buckwheat, Japanese millet, grain sorghum, or corn. Fertilize for good production. Use of herbicides is generally not required since annual weeds produce useable wildlife food. After the crop has matured in late summer or fall, reflood the site slowly to coincide with the arrival of fall migrant waterfowl.

Crop residue. To optimize waterfowl use of row crops, reflood the field slowly after harvest to coincide with the arrival of fall migrants. Waterbirds will utilize crop residue and waste grain after crops are harvested.

Structural Component Specifications:

- Levee construction. Refer to engineering design notes and materials.
- Drainage modifications, including surface ditch plugs and/or subsurface tile breaking or plugging. Refer to appropriate engineering notes and materials.
- Artificial water available? Refer to appropriate engineering design sheets for development guidance.
- Seeding guidelines for critical areas (e.g. levees), buffers and/or portions of the field that will not be inundated are outlined in the included JS-AGRON-25.

Management Guidelines:

Note: *If the management goal is to provide some fall migratory bird habitat, sites without artificial flooding capabilities should strive to maintain at least some surface water in the wetland pool through the summer. Even sites with high drainage area ratios or frequent flooding do not provide dependable runoff to reflood wetlands in early fall (August 15—November 1).*

- In general (required for CRP wetlands) surface water will be maintained on at least 50% of the pool area through spring migration (March 15 for south Missouri, April 1 for north Missouri) four out of five years. Control structures will be closed (stoplogs installed) to capture all runoff to full pool by August 1 annually.
- For sites with no artificial water source and/or limited runoff, wetland pool can be drawn down as much as 50% of the pool area to provide additional plant diversity (this is achieved by removing _____ inches of water from full pool elevation). Summer evaporation and plant transpiration may be sufficient to achieve adequate water removal to meet drawdown goals. Consult you local USDA office.
- For sites with dependable fall water or with artificial reflooding capabilities:
  - -consider slow drawdowns (inch or less of water removed/day) to stimulate annual forbs and grasses.
  - -vary the drawdown timing between years and between pools to increase the diversity of habitats provided, and to maintain wetland productivity.
  - -consider leaving at least some surface water (10% or more) in the wetland throughout the growing season to provide habitat for resident wetland wildlife and summer nesting bird species. Where reflooding is based upon surface runoff, routine drawdowns below 50% of pool elevations are discouraged.
- For sites with adequate reflooding capability, install stoplogs to 50% of the pool elevation by August 1; 75% by September 15--October 1; and install stoplogs to full pool elevation by November 1. See comments section for additional directions.
- Consider completely draining the wetland one year out of every five to control undesirable plants, set back plant succession, maintain amphibian habitat, repair infrastructure (levees and water control structures), and encourage nutrient recycling. This should generally take place after spring migration.
- Vegetation management: use disking, burning, mowing, herbicides or a combination of two or more to set back plant succession, control undesirable herbaceous and woody plant invasion, and maintain or increase habitat diversity.
  - -disking operations should aim at leaving 30% or less residue. Disking is a preferred method of controlling plant succession and reducing undesirable plant invasion. Disking can be in strips or blocks, and can also be used to create bare areas for foraging shorebirds.
  - -prescribed burning will be done according to an approved prescribed burn plan.
  - -mowing is generally used in combination with one of the other three practices in order to achieve desired results.
  - -herbicides are typically used in spot or small area applications to control problem plants. Follow all label directions when using herbicides, and ensure they are labeled for use in wetlands.

Maintenance Guidelines:

- Levees/dikes will be mowed annually to maintain permanent grass cover. Inspect for burrowing activity from muskrats or beaver, repair as necessary.
- Water control structure, flap gates and pipe are to be inspected after each major storm or flooding event, or at least annually, to ensure they are functioning properly. Remove debris from around inlet and repair any wildlife damage.
- Ensure that emergency spillway is functioning as planned. Remove logs and other debris buildups from the spillway, maintain permanent herbaceous cover, and repair any damage immediately.
- If excessive erosion occurs (by flooding/scouring or wildlife damage), repair levee/dikes/ditch plugs to original planned elevations and slopes.
- Exclude livestock from wetlands, especially levees and around water control structures.
- Use herbicides to suppress invasive vegetation and to control noxious weeds.

Consult with NRCS, MDC, or University Extension for additional recommendations.

Comment:

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