

DEFINITION

The shallow inundation of lands to provide habitat for fish and/or wildlife.

PURPOSE

Shallow water areas provide habitat for waterfowl resting and feeding, and can also support reptiles, amphibians, and insects that serve as important food sources for waterfowl, wading birds, and other wildlife. Active management of water levels and/or vegetation in shallow water areas can be used to benefit wildlife, primarily waterfowl and wading birds. The three main components of shallow water habitat are: (1) water; (2) food; and (3) cover.

Water

Besides the obvious dependency on shallow water for some wildlife, water is also critical for maintaining the conditions that support the transfer of nutrients and energy into biomass, both plant and animal forms. That transfer is critical in supporting the food chain and other habitat elements required by wildlife.

Food

Primary sources of food for shallow water wildlife are seeds and invertebrates (e.g., insects, crayfish, snails). Annual plants typically produce abundant seed. Perennial plants also produce seed, and play a critical role in maintaining organic matter content, both above and below ground. Organic matter is at the bottom of the food chain, and without a good supply, invertebrate communities will not be abundant.

Cover

Cover is important for most shallow water area species during both breeding and non-breeding seasons. Some permanent herbaceous or woody cover should be provided for nesting, resting and protection from predators.

Land owners and managers please note: If you received cost-sharing for your shallow water area, be sure to check with your funding agency/organization for specific management requirements. Not all of the management options described in this job sheet may be allowed on your site.



MANAGEMENT

Management of shallow water habitat typically addresses all three of the major components to some extent. Four common ways to manage shallow water habitats for wildlife are: (1) Seasonal moist-soil management; (2) Natural or minimal management; (3) Planting and flooding of annual crops; and (4) Flooding of crop residue.

Vegetation Management

Seasonal Moist-Soil Management. The purpose of seasonal moist-soil management is to maintain areas of natural food-producing herbaceous vegetation, with a predominance of annuals. Annuals, such as wild millet and smartweeds, typically produce abundant food in the form of seed. Moist-soil management consists of a late spring drawdown, followed by light soil disturbance (e.g., light disking). Drawdown is needed to provide conditions for germination of moist-soil plants, and make possible the use of heavy equipment for soil disturbance. Soil disturbance sets back the succession of perennial plant species, and redistributes annual plant seeds for better germination. Soil disturbance activities are typically conducted every 3 years, and a portion of the shallow water area is left undisturbed to provide cover and other benefits. If the site is likely to be lacking a suitable natural seed source, a one-time seeding of desirable moist-soil plants may be needed when the shallow water area is constructed.

Natural or Minimal Management. Natural or minimal management requires the least amount of time and expense because vegetation and water levels are established based on natural conditions. Perennial

plants, such as sedges and grasses, are more likely to dominate with this type of management. Depending on the site, the natural water regime may limit the growth of undesirable woody species. Otherwise, occasional brush-hogging or spot treatment during dry periods or after drawdown may be needed.

Planting and Flooding of Annual Crops. Otherwise known as “plant and flood,” this more intensive management regime consists of a late spring planting of an annual crop, such as corn or millet, followed by a fall flooding. Because the seeds of annually planted crops tend to deteriorate relatively quickly when inundated, it is important to time the flooding with waterfowl migration. Site conditions, such as watershed size, water availability, and drainage, are important considerations for “plant and flood” management because of timing constraints for both activities. Because shallow water areas tend to act as nutrient sinks, fertilizer application is usually not required to achieve adequate plant growth.

Flooding of Crop Residue. Similar to “plant and flood” management, the main difference is that the crops are harvested prior to flooding. Waste grain and soil invertebrates are available for food. This type of management can be particularly attractive to migratory geese, which have a preference for expansive open areas.

Water Level Management

As noted above, the ability to manipulate water levels is important for managing shallow water habitats. Two typical types of water control structures are: (1) box inlets; and (2) pipe inlets. Box inlets have boards that can be removed and inserted to control water levels. Pipe inlets usually have an elbow with a standpipe that can be rotated up or down and set at the desired water level.

The timing and length of drawdown are important considerations in water level management because of

the effects on waterfowl use, vegetation, and other factors. Staged drawdowns over a period of 2 weeks or more provide the following benefits:

- Increased moist-soil plant germination, growth, and seed production;
- Reduced potential for cocklebur problems;
- Increased duration of invertebrate availability as a food source;
- Increased use of site by waterfowl and shorebirds;
- Reduced potential for nutrient loss from the site.

OPERATION AND MAINTENANCE

Proper operation and maintenance are necessary to promote successful and long-term functioning of the shallow water area. See the following pages for specific management, operation, and maintenance requirements.

SUGGESTED ADDITIONAL READING

U.S. Fish and Wildlife Service, *Waterfowl Management Handbook*. This is a collection of fact sheets with detailed information about various waterfowl management topics. It was written primarily for the mid-western states, but much of the information is also applicable for the mid-Atlantic. Available free on the Internet at: <http://www.mesc.usgs.gov/>.

University of Maryland, Cooperative Extension, *Wildlife Management Fact Sheet Series*. This is a collection of fact sheets not only about managing for waterfowl, but also for rabbits, quail, pheasants, squirrels, songbirds, and other wildlife. Available free on the Internet at: <http://pubs.agnr.umd.edu/>.

USDA – NRCS, Maryland. *Shallow Water Area Management for Wildlife* Fact Sheet. Available free at: <http://www.md.nrcs.usda.gov/technical/biology/biology.html>.



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SHALLOW WATER AREA MAINTENANCE AND MANAGEMENT SCHEDULE				
Name:		Assisted by:		Date:
Farm:	Tract:	Field(s):	Acres:	Program:
Management Objective				
Check all that apply: <input type="checkbox"/> Dabbling ducks <input type="checkbox"/> Geese <input type="checkbox"/> Shorebirds <input type="checkbox"/> Other:				
Water Level Management				
NATURAL – Allow natural precipitation and drying cycles to control water level.				
<input type="checkbox"/> Will be used on ____ acres <input type="checkbox"/> Optional on ____ acres				
ACTIVE – Utilize water control structures and/or water pumps to control water level.				
<input type="checkbox"/> Will be used on ____ acres <input type="checkbox"/> Optional on ____ acres <input type="checkbox"/> Not Allowed				
Drawdown gradually starting: _____ over: _____ weeks				
<input type="checkbox"/> Re-flood gradually starting: _____ over: _____ weeks, to control food access at water depth: _____ in				
Return control structure to normal (full) position no later than:				
<ul style="list-style-type: none"> For drawdown with box inlets, remove a board and wait a few days before removing the next one. For pipe inlets, rotate the pipe downward a few inches at a time. Reverse the procedure for gradual re-flooding. The earlier the water control structure is set to the normal (full) position, the greater the potential to capture runoff and prevent nutrients and sediments from leaving the site. Leave the site flooded through the winter. 				
Vegetation Management				
NATURAL – Maintain perennial grasses, sedges, rushes, and other herbaceous vegetation.				
<input type="checkbox"/> Will be used on ____ acres <input type="checkbox"/> Optional on ____ acres				
<ul style="list-style-type: none"> If needed, spot mow or burn occasionally to reduce encroachment of trees and shrubs. 				
MOIST SOIL MANAGEMENT – Disturbance to encourage naturally-occurring annual moist-soil plants.				
<input type="checkbox"/> Will be used on ____ acres <input type="checkbox"/> Optional on ____ acres <input type="checkbox"/> Not Allowed				
<ul style="list-style-type: none"> Every three years, lightly disk the pool area at the start of the growing season (after drawdown). Do not fertilize the moist-soil area. Natural moist-soil plants do not need additional fertilizer. 				
ANNUAL CROPS – Plant annual crops for use by wildlife.				
<input type="checkbox"/> Will be used on ____ acres <input type="checkbox"/> Optional on ____ acres <input type="checkbox"/> Not Allowed				
<ul style="list-style-type: none"> Plant the following annual crops for wildlife: _____ Fertilize only if needed, based on a soil test. To the extent possible, minimize the use of pesticides on the site. Most annual weeds (except for noxious weeds or invasive plants) are acceptable and will be readily utilized by waterfowl. 				
CROP RESIDUE MANAGEMENT – Flood residue from harvested crops for waterfowl use.				
<input type="checkbox"/> Will be used on ____ acres <input type="checkbox"/> Optional on ____ acres <input type="checkbox"/> Not Allowed				
<ul style="list-style-type: none"> Plant and harvest conventional row crops, as usual. To the extent possible, minimize the use of pesticides and fertilizers on the site. 				

SHALLOW WATER AREA MAINTENANCE AND MANAGEMENT SCHEDULE

Operation and Maintenance

- Inspect all embankments and structures at least once per year and after every major storm. Promptly remove trash and obstructions, fix leaks, and make other repairs as needed.
- Maintain buffers to prevent sedimentation and provide wildlife cover. On grassy buffers and embankments, spot mow or burn infrequently (not more than once every 2 to 3 years) if needed to reduce encroachment of trees and shrubs. Do not mow or burn between April 15 and August 15, to protect ground-nesting wildlife.
- Control noxious weeds and other invasive plants by spot treatment, using mechanical methods or approved herbicides. Control of noxious weeds (specifically, Johnsongrass, Shattercane, Canada Thistle, Bull Thistle, Plumeless Thistle, and Musk Thistle) is required by state law. Noxious weed control can be conducted during the primary nesting season, but may require advanced notice if enrolled in a cost-share program.
- Deter colonization of undesirable plants (e.g., cocklebur, phragmites, cattails, red maple, sweetgum) by conducting regular site inspections and spot treatment (using mechanical methods or approved herbicides). If undesirable plants become established, disk 2 or 3 times by mid-summer, then immediately flood (if possible) until the following spring.
- Nuisance animals such as beavers and muskrats may be removed in accordance with state game regulations. Geese can be discouraged by minimizing the area of open water and promoting the growth of tall vegetation in both the shallow water area and buffer.
- Avoid noisy activities, such as mowing or use of recreational vehicles, in or near the water when waterfowl are present. To the extent possible, livestock, dogs, and cats should be kept off the site.
- To prevent disease, promptly remove and dispose of dead birds and fish. Unless required for management, avoid flooding sites that have been dry for a long time in summer when temperatures are high, because under these conditions the bacterium that causes avian botulism can flourish.
- Leave mature plants standing so seed remains on stalks and is equally distributed over the site. Utilize water level management to control waterfowl access to seed. *Mowing or knocking-down of mature seed-bearing plants in areas where waterfowl will be hunted is considered baiting, and therefore illegal under Maryland state law.* For more information, contact the Maryland Department of Natural Resources.
- Avoid the use of pesticides on the site to prevent harm to wildlife that use the shallow water area.

Additional Recommendations