**NATURAL RESOURCES CONSERVATION SERVICE**
**CONSERVATION PRACTICE STANDARD**

# Wetland Wildlife Habitat Management
# Texas Supplement

**(acre)**

**Code 644**

Targeting: Identifying a target species (wood ibis) or group of similar species (puddle ducks) is essential. Most wetlands, because of vegetation and water depths, provide "ideal" habitat for a narrow group of animals although many non-target species may use the wetland.

Source of Water: The source of water that drives a wetland is of extreme importance. The water source should be adequate to meet the needs of the target species. For example, only minimal success can be expected if the only water source to a managed moist-soil wetland is rainfall, and the target species are early fall migrants. Intensively managed wetlands should be planned to provide a water source such as a well, stream or irrigation water.

Planning and Management: Preparing a management plan for an existing wetland is extremely important. Often a small change, such as manipulation of water level, can cause significant effects on existing animal and plant species. A careful review should be made of state and federal species of concern before beginning any management that could impact existing habitat. Federal and state regulations regarding wetland conservation must be followed.

Wetland managers need to remember the following: *"First do no harm"* and *"Depth, Duration, and Timing (DDT)".* To "first do no harm" is to emulate the natural water regime. Never flood a wetland to the same depth and duration in successive years and never flood or drain on the same date year after year. In order to "first do no harm" to wetland plants, especially trees, it is extremely important to vary the "DDT" among and within years.

Wetland birds require four types of habitat areas to fulfill their needs. These areas are feeding, resting/loafing, roosting and nesting. Some wetlands can contain all four but this is uncommon. Puddle ducks commonly use water depths of 6 - 18 inches. Most diving ducks prefer water in the 3 - 5 feet range. Wading birds generally utilize water 3-5 inches deep. Many shore birds require mudflats or shallow water averaging 2 inches or less. There are many wetland-associated birds, such as red-winged blackbirds, that use trees, shrubs, and shoreline vegetation. Larger wetland complexes that contain several habitat types will have a higher diversity of wildlife.

Protecting or developing unique habitats within a wetland is often critical to the overall wetland management plan. Motts of trees in wetlands are often used as rookeries by egrets, herons and other colonial birds. These trees should be protected. Islands can be created and planted in trees and shrubs to encourage future rookeries.

Manipulation of water depths affects the plants and animals, including invertebrates, in a wetland. Water depths can be used to control noxious vegetation as well as stimulate desired plants. Water birds consume the seed and various plant parts, but much of the energy from plants is transferred to primary consumers, such as invertebrates. Invertebrates provide a vital role in maintaining waterfowl health. Invertebrates are comprised of about 50% protein. Some plants, such as smartweeds

and wild millets, not only produce beneficial seeds, but their leaves provide excellent habitat for invertebrates.

Except for forested wetlands, most shallow water impoundments equipped with water control structures should be dewatered from April through June. Late May through June is optimal. Dewatering too early in the growing season encourages establishment of undesirable plants. Draining should be a gradual process for survival and concentration of invertebrates.

Overgrazing by livestock is detrimental to any wetland system. Proper grazing is a valuable management tool in some herbaceous wetland systems. Grazing management may be used to manipulate the succession stages of a wetland plant community. Grazing should be avoided during the nesting season of March 15 – July 15.

## Buffers – Wetland Protection

Buffers to protect wetlands are often overlooked in the planning process. Buffer protection is important to both forested wetlands and non-forested wetlands. Wetlands that are not protected by buffer strips may be subject to erosion, sedimentation, and pesticide contamination. Buffers of grasses, shrubs, and trees serve to trap sediments and provide a variety of wildlife habitats. Sivicultural activities in and around wetlands must be conducted in a manner that will have minimal impact.

Animal Damage Control - Managed habitat can be impacted by beavers, alligators, nutria and muskrats. These animals can burrow into dikes causing failure, stop up water control structures, plug spillways, "eat out" foods of target species, cut down trees and cause dike crown erosion. Management and construction methods can be applied to avoid nuisance animal. Some methods include attaching sewer drain pipe to water control structures, when constructing dikes, moving the borrow area at least eight feet from the toe, and using chain-link fencing material in alligator crossing. Control of beaver by hunting and trapping is usually ineffective.

## Managing Habitat Types

*Bottomland Hardwoods* – "DDT" of flooding impacts plant species composition on a site. Trees that are tolerant to flooding for long periods of time are bald cypress, tupelo gum, water elm, water locust, and black willow. Trees that withstand long periods of flooding (3-6 months during the growing season) are swamp cottonwood, red maple, overcup oak, water elm and water hickory (bitter pecan). Moderately tolerant (1-3 months during the growing season) species are nuttall oak, green ash, and willow oak. Trees that can withstand short periods of flooding during the growing season are sweetgum, black gum, sugarberry, American elm, pecan, water oak, bur oak and cherrybark oak.

Allow only natural flooding of newly planted hardwoods until the trees reach a sapling (6 to 10 feet in height) size.

*Greentree Reservoirs* are stands of bottomland hardwood forests flooded to provide habitat for waterfowl and associated species. They are typically constructed with dikes & water control structures and flooded only during the dormant growing season. These wetlands have a history of being flooded for periods of time that exceeds the tolerance of the plant community. When this happens, a shift to more water-tolerant species occurs. In more extreme instances, the existing trees die and the area can shift to a marsh.

Typically in Texas, flooding of greentree reservoirs should begin no sooner than November 1 and be dewatered no later than April 1 (March 1 preferred). Water depths must not exceed 18 inches. Water retention must occur only when the plants are dormant. Stressed trees show signs of canopy loss, thinning, or yellowing of leaves during the growing season. If tree/shrub regeneration is a management objective, the impoundment should not be flooded for prolonged periods following heavy mast years. A sound approach is to flood no more than two out of three years.

*Emergent Marshes* are fresh, brackish, or saline wetlands that are generally flooded from 12 to 30 inches in depth. These marshes contain vegetation that is rooted in the soil and emerges above the water surface. Typical emergent plants include cattail, bulrush, and rice cutgrass. These sites are valuable as nesting and brood rearing habitat for rail, bittern, grebe, and coot. Emergent marshes are used by winter migrant water birds for feeding, roosting and resting. Maximum use by most bird species is realized when emergent plants cover approximately 50% of the water surface.

Grebes, coots, and American bitterns use floating nests that are attached to emergent vegetation, so any extreme water level fluctuation during the nesting period could cause egg loss or nest toppling. An additional management practice involves draining emergent marshes after nesting birds have fledged. This attracts fall migrating shorebirds that mostly prefer feeding in 1 to 2 inches of relatively open water. Dewatering emergent marshes early in the growing season can result in increase of unwanted plants.

*Managed Moist-Soil Units* are wetlands constructed for waterfowl are managed as moist-soil units. Water depths should be 6 to 24 inches with an average of around 14-16 inches. These units are important because of the great diversity of foods they produce. In addition, seasonally flooded moist-soil sites tend to harbor greater densities of invertebrates than do habitats that are permanently flooded.

Many moist-soil unit managers dewater sites too early in the growing season. Total seed production is generally greater when impoundments are drained April 15 - May 15. Slow drawdowns typically produce diverse vegetative cover, while fast (less than 2 weeks) drawdowns are more likely to result in a stand of less diverse vegetation. For maximum production of desirable seed, native plant communities must be maintained in an early successional stage. The percentage of less desirable plants generally tends to increase in each consecutive year if the area is not disturbed.

Moist-soil units normally should be disked at 2-3 year intervals, if possible, to retard succession and control invasion by undesirable plants. If undesirable plants invade 50% or more of the managed area, control by EPA-registered herbicides, disking, shredding, flooding, and/or prescribed burning.

*Cropland Fields (*rice, grain sorghum, soybeans and corn*)* can usually be managed similar to managed moist-soil units. Rice fields are economical to manage for waterfowl, shore birds, and wading birds because of existing irrigation system dikes/levees, pumps and water control structures.

Rice fields are usually farmed once every 3 or 4 years. Some fields that have been precision leveled are farmed more often. In rice production years, these fields can be flooded to allow ducks to feed on waste grain. It is a common practice to roll or lightly disk portions of rice fields before flooding for waterfowl. Waterfowl prefer these created openings in stubble in which to land and feed. The procedure of manipulating rice stubble prior to flooding aids in decomposition, which increases invertebrate populations.

Small grains decompose at varying rates when flooded. Rice, sorghums, and corn persist for extended periods. At least 10% of the field should be flooded in August to mid-September to a depth of 2-6 inches to provide habitat for early migrants.

Idle cropland fields are excellent feeding and loafing areas for many wetland-associated birds. Idle fields that are covered with dense vegetation should be partially mowed or disked prior to allowing them to flood in the fall.

*Scrub/Shrub* wetlands are dominated by woody species less than 20 feet tall, such as young black willow, swamp privet, water elm and buttonbush. Scrub/shrub wetlands are transitional between emergent marshes and forested wetlands. These wetlands are valuable roosting sites for birds and

produce large amounts of invertebrates because of the tremendous amounts of decaying leaves.

*Gulf Coast Depressions* - Common attributes of a quality Gulf Coast depression are [1] a vegetative buffer of at least 50 feet in the upland surrounding the depression, [2] a ring of vegetation along the perimeter of the depression dominated by annual wetland plants (smartweeds, wild millets, spikerushes), [3] a ring of vegetation between the perimeter and the center which is dominated by larger annuals and perennial species (soft rush, bulrushes, spikerushes, beaked rushes , arrowheads) and [4] an open water center with submergent and floating aquatic vegetation.

For maximum wildlife value, cattle should not have access to the depression during the winter, spring or early summer. Once the soil in the outer perimeter dries sufficiently to support livestock, prescribed grazing can be effective in retarding plant succession along the outer perimeter. Woody vegetation tends to invade these areas. Mowing the upland buffer and the outer portion of the depression on a 2-3 year rotation is recommended to control invading woody vegetation. Larger Gulf Coast depressions are highly valued nesting habitat for an array of birds and small mammals. Mowing should be restricted to the months of August, and September to minimize impacts to nesting wildlife and ensure ample winter vegetation to provide needed winter cover.

*Playas* of the Southern High Plains and Rolling Plains collect runoff from approximately 90% of the region they occupy. Plowing, burning and sedimentation greatly harm playas in intensive agriculture areas. In areas of rangeland, overgrazing of playas and their watershed can be detrimental to the biodiversity of the ecosystem. Poor residue production and management on cropland, and overgrazing on rangeland eliminates desirable cover for most species and increases erosion, which increases turbidity and sedimentation. Providing 50 to 100 foot grass/forb buffer areas that limit grazing and sedimentation around and in the playas will increase and improve nesting for all ground nesting species. These buffers and the playas also provide needed winter cover.

Because of the unpredictability of rainfall, management plans for wintering waterfowl should include options for flooding playas during the winter if a water source is available. This aspect cannot be overemphasized. The cost of management must incorporate the expense of maintaining a flooded playa to satisfy management objectives. Managers must be prepared to pump water from other sources to maintain water in a playa during desired periods of the year.

Moist-soil management within playas involves drawdown or irrigation for creation of saturated, exposed soil to promote germination and growth of mudflat species (smartweeds and barnyard grass). Moist-soil management allows landowners to continue using water collected in playas for irrigation of crops because recommended periods of creating moist-soil conditions correspond with irrigation schedules.

## *Deep Water Habitats and Shorelines*

Deep-water habitats (> 6 feet) are often underestimated for their value for wildlife. These habitats can be managed to produce plant foods and invertebrates. Farm ponds provide valuable feeding and resting areas.

## Plantings in Wetlands:

*Note: Baiting laws and regulations should be fully understood before hunting over wetlands that have been planted to attract waterfowl.*

*Non-cropped Wetlands* - Wetlands that are not being cropped (farmed) are normally managed for native plants. Native plants attractive to a “target species” can be introduced into a wetland if absent. Japanese millet is frequently used. Sites that are low in fertility can be improved by applications of fertilizer. Soil samples from these sites should be taken prior to fertilizer application to determine nutrient needs.

*Cropped Wetlands* can be planted to attract waterfowl. This is especially true in fallow fields. Plant strips of rice, corn, wild millets or a combination of these plants. Planting in strips provides a variety of food sources. Caution should be used in introducing plants that may be detrimental to the following cash crop.

*Japanese Millet* should be seeded at 5.0 lbs. PLS (Pure Live Seed) per acre. Plant from April through July. Early plantings may lodge (fall over) and shatter before arrival of migrating waterfowl. Optimal planting dates are May and June. Southern and coastal Texas counties may plant as late as July. Adequate seedbed preparation gives optimum results. Alternatively, seed can be scattered on mudflats and in shallow water less that 1inch in depth.

*Browntop Millet* should be planted on well-drained soils at 5.0 pounds PLS per acre. It can be planted late in the growing season (July) and still produce suitable yields with limited moisture. Browntop millet has limited use by waterfowl because it is not well adapted to wetlands but it can be used in surrounding buffers and food plots.

*Rice* is an excellent plant to attract waterfowl. Rice field complexes can be managed to attract numerous wetland-dependent animals. Rice planting is useful for newly created wetlands and wetlands that have been heavily invaded by low quality plants. Many wetlands, especially those without water control structures, become dominated by rank vegetation, such as cattail, giant cutgrass, and bulrush. If these fields can be drained and plowed, rice can be planted for one or more years to control the unwanted vegetation. Full seeding rates are 40 lbs. PLS per acre. Mixing Japanese millet and sesbania with rice is acceptable.

*Sesbania (Sesbania macrocarpa)* is commonly called coffeebean. It should not be confused with bladder-pod (*S. vesicaria)* or rattlebox (*S. drummondii)*. Bladder-pod and rattlebox have little known value as food. Coffeebean grows from 4 to 10 feet in height and produces a pod that is mostly from 6 to 8 inches in length. The elongated seed are ¼ to 3/8 inches in length. Coffeebean can be established by broadcasting seed over dry or lightly disturbed soil. Scattered, small stands add diversity to a wetland. Thick, immense stands may be a hindrance. A full seeding rate is 5.0 lbs. PLS per acre. Seeding coffeebean with a mixture of other species is preferred, and it should comprise no more than 20% of the seed mixture..

*American Jointvetch* seed are of high value to birds, and browsers relish the forage. Plants tolerate light flooding after emergence and often form dense colonies on mud flats and disturbed areas. A full seeding rate is 5.0 lbs. PLS per acre. Jointvetch should be planted in mixtures and comprise no more than 20% of the seed mixture.

*Switchgrass* is a perennial, native bunchgrass that provides nesting and cover in an around wetland complexes. It grows from 2 to 8 feet in height. Switchgrass is adapted to wet soils and will withstand limited flooded. Pure stands are established using 3.0 lbs. PLS per acre. Pure stands should be established in strips. When planted in mixes, switchgrass should not comprise more than 25% of the seed mixture.

*Corn and Grain Sorghum* Both of these plants require row planting and some cultivation to be successful. Corn has an advantage over grain sorghum in that it will withstand longer periods of wetness before molding or deteriorating. Pure seeding rates are 50 lbs. PLS for corn and 5.0 lbs. PLS for grain sorghum.

*Wheat, Oats, and Elbon Rye* can be planted to attract geese, ducks, and sandhill crane. Geese will consume large amounts of the green forage. Wheat does not produce well on wet soils, but is the most cold tolerant of these species. Oats grow fast in the fall and slow down in cold weather. Oats will not withstand the colder conditions of the northern third of Texas most years. Elbon rye is used primarily in the sandy lands of East Texas. Like oats, Elbon rye makes a fast growth in the fall. Full seeding rates are 15 lbs. PLS per acre

for Elbon rye or oats and 25 lbs. PLS per acre for wheat..

Combination planting of these plants produces stands where something will survive in most years – wet, dry, cold, or hot. The seed can be drilled into existing short sods of grasses or for higher yields, the soil should be well prepared.

*Annual Ryegrass* is adapted to a wide variety of soils, but can not survive extreme cold. It will grow in soils that are slightly wet as well as on dry sites. The seed of ryegrass is of little value but the plants produce excellent forage for waterfowl. Stands can be established by broadcasting the seed and lightly disking to cover. In areas where farm equipment can not reach sites, the seed can be simply broadcast. The full seeding rate is 5.0 lbs. PLS per acre. Ryegrass stands can be maintained for several years if it is allowed to make seed by proper grazing or delayed shredding. If ample seed are present, a light disking in the early fall will ensure a good stand.

## Common Native Aquatic and Wetland Herbaceous Plants Beneficial to Wildlife

Paspalums – *Paspalum spp*
Buttonbush – *Cephalanthus occidentalis*
Chara (Muskgrass) – *Chara spp.*
Coontail – *Ceratophyllum demersum*
Cordgrasses – *Spartina spp*
Arrowheads (duck potato) – *Sagittaria spp*
Panicums – *Panicum spp*
Giant cutgrass – *Zizaniopsis miliacea*
Jointvetches – *Aeschynomene spp*
Ludwigias – *Ludwigia spp*
Pondweeds – *Potamogeton spp*
Sedges – *Carex spp*
Coffeebean – *Sesbania macrocarpa*
Smartweeds – *Polygnum spp*
Spikerushes – *Eleocharis spp*
Sprangletops – *Leptochloa spp*
Water shield – *Brasenia schreberi*
Wild millets – *Echinocloa spp*

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APPROVAL:

**/s Gary Valentine** **July 1, 2000**
State Wildlife Biologist Date

STATEMENT OF NEED:

This practice is needed in the _____FOTG.

_____
Resource Team Leader (District Conservationist) Date

CERTIFCATION:

Reviewed and determined adequate without need of revision:

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Zone Wildlife Biologist Date

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Zone Wildlife Biologist Date

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Zone Wildlife Biologist Date

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Zone Wildlife Biologist Date