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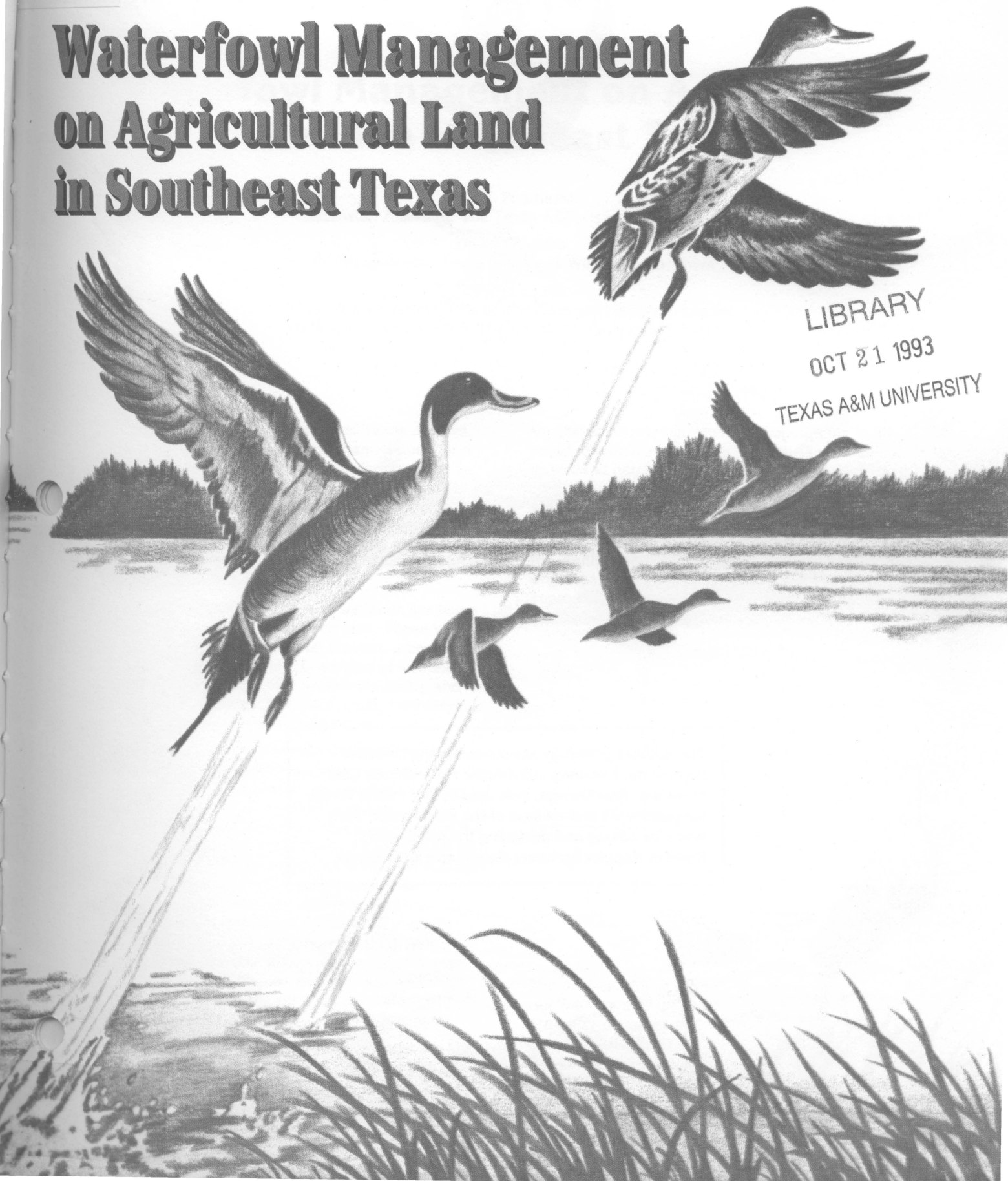
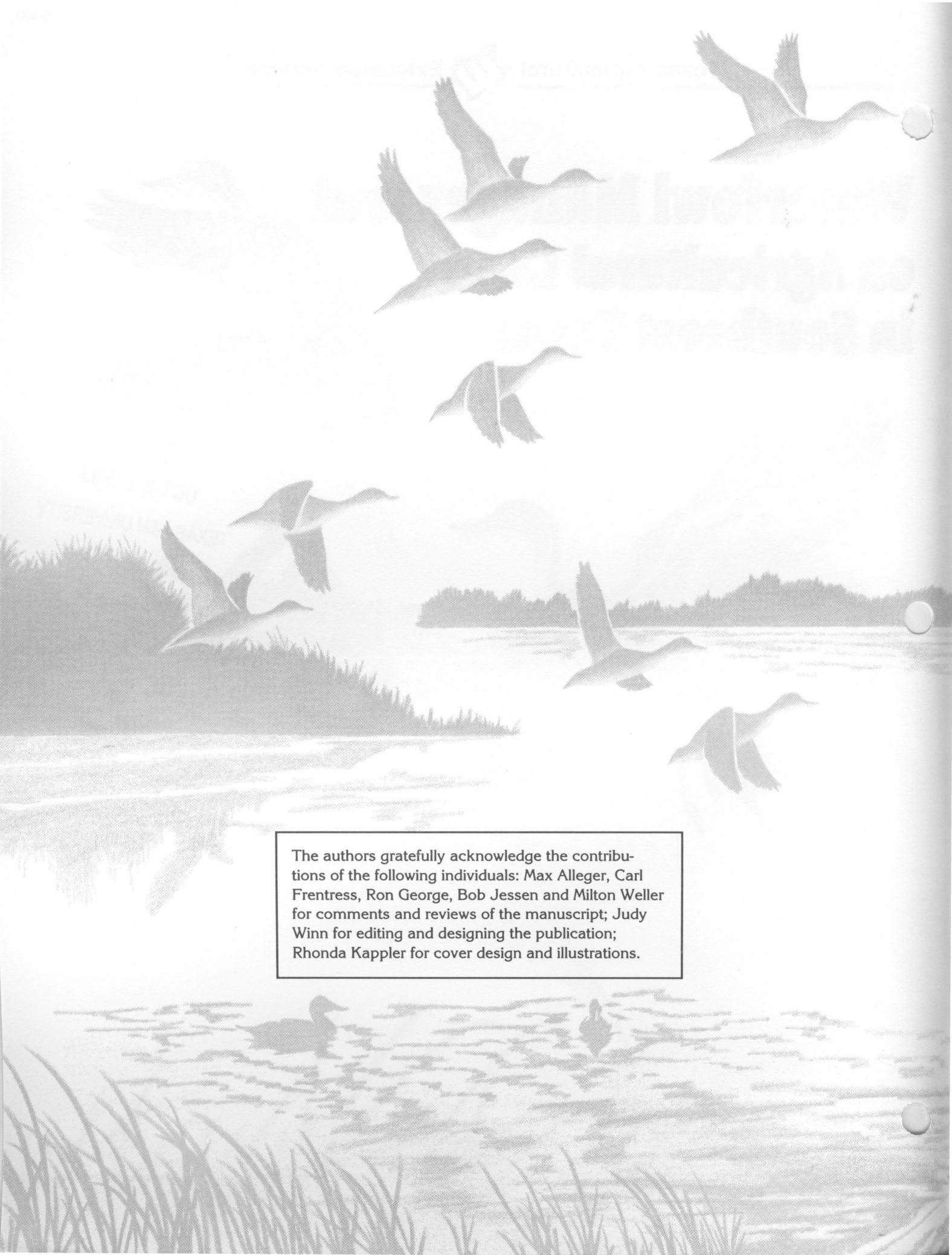
Texas Agricultural Extension Service

Waterfowl Management on Agricultural Land in Southeast Texas





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Waterfowl Management on Agricultural Land in Southeast Texas

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Many kinds of wildlife in Southeast Texas depend on the wetlands and privately owned agricultural land of the rice prairie region. Wetland enhancement and waterfowl management can benefit landowners and wildlife alike. Properly managed wetlands and crop lands provide better habitat for wildlife. Leasing land for hunting or other recreational activities, such as bird watching or photography, can give the landowner alternative sources of income.

Approximately 300,000 acres of wetlands are being destroyed in the United States each year. These wetland losses are caused by coastal erosion, urbanization, industrialization and the conversion of wetlands to agricultural production. Prime waterfowl nesting and wintering areas are being lost. As a result, waterfowl population numbers are at an all-time low.

Historically, the most common wetland conservation method has been land acquisition, or the direct purchase of wetlands important to waterfowl and other wildlife. But after years of wetland acquisition, duck populations continued to decline. Because much of the remaining waterfowl habitat in North America is on private land, the 1986 North American Waterfowl Management Plan (NAWMP) established incentives for landowners to maintain and manage critical habitat. The NAWMP set up nine Joint Ventures to meet its goal of increasing waterfowl numbers. Joint Ventures are partnerships of public and private organizations working to preserve wetlands and increase waterfowl populations in some of the most critical waterfowl habitat regions.

The prairies in the Texas rice belt are under the Gulf Coast Joint Venture. Because they support some of the largest wintering waterfowl populations in the world, the prairies of the rice belt are considered critical to wetland habitat conservation and enhancement.

Prairies in the Texas Rice Belt

The prairies in the Texas rice belt are found along the southeastern Gulf Coast of Texas. There are ten distinguishable prairies in the Texas rice belt; they are separated by bands of woodlands along the major creeks and rivers (Fig.1).

The prairies in the Texas rice belt cover a large area along the southeastern Gulf Coast of Texas.

The first European settlers on the Texas coast found native bluestem prairies such as this.

Before the rice industry began around 1850, the prairie consisted largely of a tall grass plant community, with some post oak savannah on the upland areas. Tall bunchgrasses, including big bluestem, little bluestem, indiangrass, eastern gamagrass and several kinds of panic grasses, dominated the area. The area's average annual rainfall of 35 to 55 inches, coupled with a 270-day growing season, made this prime agricultural land. By 1899, Texas had its first large, successful rice crop (8,497 acres on the Beaumont prairie and 200 acres on the Lissie prairie).

Historically, large concentrations of snow geese and other waterfowl wintered in brackish marshes along the Gulf Coast. Summer fires followed by fall and winter rains encouraged new plant growth that attracted large numbers of waterfowl to the coastal prairies. As the rice industry developed, the waterfowl became increasingly dependent on the inland prairies for wintering areas. In 1991-92, 2 million waterfowl wintered on the prairies of the Texas rice belt. Their continued success depends on the land-use patterns and agricultural practices found there.

Rice fields, depressional wetlands, reservoirs, oxbow lakes, stock tanks and moist-soil impoundments can all be managed to improve waterfowl habitat. Many of these areas already support wetland plants and minimal effort may be required to enhance their suitability for water birds.

Waterfowl on the Texas Rice Belt Prairies

In the late 1950s and early 1960s, Canada geese, white-fronted geese and snow geese began to use ponds and reservoirs created by commercial hunting operations and private landowners. These birds gradually expanded their roosting areas from the coastal marshes to artificial roosts in the prairies of the rice belt. Aerial waterfowl surveys conducted by the Texas Parks and Wildlife Department (TPWD) between 1981 and 1986 indicated an average winter population of 1.05 million geese and 1 million ducks. Snow geese were the most common, numbering more than 800,000 birds, followed by an average of 130,000 white-fronted geese and 90,000 Canada geese. The 1 million ducks included many species of varying numbers (Table 1). Northern pintails and green-winged teal accounted for the largest number of ducks wintering on the prairies. Other ducks included northern shovelers, American widgeons, gadwalls, mottled ducks, blue-winged teal, mallards and wood ducks. Mottled ducks are common year-round residents, while fulvous and

black-bellied whistling ducks are relatively common spring and summer residents on the prairies of the Texas rice belt.

Table 1. Average numbers of common duck species seen during the annual mid-winter surveys of the upper and middle Texas Coast, including the rice prairies, January 1982-1986.

Species	Average winter population
Northern pintail	327,000
Green-winged teal	223,800
Gadwall	108,300
Northern shoveler	55,000
Mottled duck	38,800
Mallard	36,100
American widgeon	21,100
Blue-winged teal	4,000
Total	814,100

Waterfowl Food Sources

Waterfowl use three primary food sources: agricultural crops, native vegetation and invertebrates. Rice is an important waterfowl food and is available throughout October and November. The average amount of waste rice left after second-crop harvest is 125 pounds per acre. By mid-January, most waste rice has been consumed by waterfowl and other wildlife or has sprouted or deteriorated. Geese also feed on waste grains of soybeans, corn and milo.

In the spring, when waste grain is depleted, geese and ducks will feed on the seeds and new growth of native plants such as nut grasses, bulrush, sedges, smartweed, clovers and panic grasses. These native plants, so valuable to waterfowl, are considered weeds in Texas rice fields (Table 2). These wetland plants also grow in shallow areas in reservoirs and stock tanks, depressional areas in fields or pastures and creek or river bottoms.

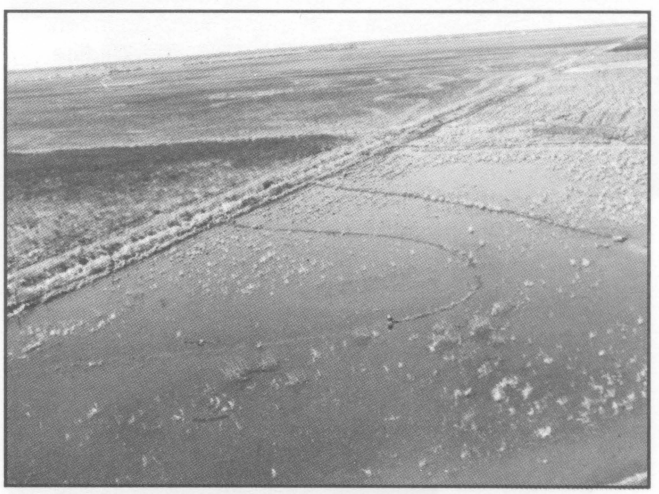
Waterfowl eat invertebrates in the spring to supply high protein for breeding and reproduction. Flooded, harvested rice fields are an excellent source of invertebrates in February and March.

Table 2. Native plants used by waterfowl in the rice prairie region of Texas.

Common name	Scientific name
Sprangletop	*Leptochloa* spp.
Common burrhead	*Echinodorus* spp.
Barnyardgrass	*Echinochloa* spp.
Spikerush	*Eleocharis* spp.
Beakrush	*Rhynchospora* spp.
Panicum grasses	*Panicum* spp.
Paspalum grasses	*Paspalum* spp.
Nutgrass	*Cyperus* spp.
Sedges	*Carex* spp.
Redrice	*Oryza sativa*
Broadleaf signal grass	*Brachiaria platyphylla*

Roost and Rest Areas

Over the past 40 years, landowners, waterfowl hunters and commercial hunting operators have recognized the importance of shallow-water roosting sites. To a great extent, the abundance of wintering ducks and geese on the rice prairies is due to the availability of shallow roost ponds. In the early 1950s, landowners with an interest in waterfowl constructed a few large roost ponds. These ponds received minimal hunting pressure and soon attracted thousands of waterfowl. Today, there are roost ponds along the entire Texas coast.



This roost pond is typical of many along the Texas coast.

Major roost ponds range in size from 5 to 200 acres. Roost ponds should be at least 10 acres in size and no more than 18 inches deep. The upper ends of the ponds should contain gently sloping shorelines and bottoms. Roost ponds should be built on sites with impermeable soils and large watersheds. Some roost ponds are flooded year after year, while others are managed in rotation with rice production. Burned, heavily grazed, mowed or lightly disked moist soil areas, such as fallow rice fields with refurbished exterior field levees, create good shallow water roosts. Rice fields also may be used after the second crop is harvested simply by closing the water control structures or levees. Landowners can get water for these roost ponds from creeks and rivers (under water rights granted by the Texas Water Commission), purchase water through canal systems, pump water from deep wells or collect rainfall runoff. Fields are usually flooded in September or early October when the first waterfowl arrive. Most managers try to maintain or increase water depths throughout the winter.

Roost ponds created on freshly plowed land and leveled fields may cause problems because the water usually becomes very turbid. In 1988 and 1989, devastating outbreaks of avian cholera occurred on the mid-Texas Coast. The bacterium which causes avian cholera was able to persist longer in turbid roost ponds because ultraviolet light could not penetrate the water to kill the bacterium; thus, more birds were exposed and killed. Water quality can be maintained by periodically flushing stagnant ponds.

Management of Habitat

Several agencies can provide helpful information about habitat management. National Wetland Inventory maps (available from the U.S. Fish and Wildlife Service and Texas Parks and Wildlife Department) and soil survey maps (available from the Soil Conservation Service or the Agricultural Stabilization and Conservation Service in each county) aid in locating wetlands and planning for their development or management. County contour maps available from county drainage districts, aerial photographs from the Texas Natural Resource Information Service in Austin, and topographic maps from the United States Geological Survey also provide useful information for determining drainage patterns, watersheds and locations of natural wetlands.

Rice and Grain Fields

Plowing of rice fields after the second harvest eliminates much of the waste grain and is not beneficial to waterfowl management. However, flooding freshly harvested rice fields, especially those with unharvested rice on the levees or in portions of the field, provides excellent waterfowl habitat. Water may be pumped into the field from wells or canals or collected from the watershed by closing drainage ditches and overflows. Disking, shredding or roller-chopping small areas before fields are flooded creates valuable open areas for waterfowl access.

Standing rice on levees or in other areas of the field provides waterfowl with an abundance of waste grain for a longer period of time.

In traditional rice field rotation there are fallow fields that can be managed for wintering waterfowl. The native forbs and grasses growing in fallow fields will produce seed, and fall plowing of fallow fields creates an ideal seedbed for their germination.

Many landowners on the rice prairies include cattle grazing in their rice field rotation. Grazing opens up dense stands of vegetation and disturbs the soil, which promotes seed germination. Grazing also increases the availability and diversity of food plants. Some landowners use aircraft to seed ryegrass or winter wheat into harvested rice fields to improve winter pasture. Waterfowl may feed heavily on these stands of ryegrass or wheat in late winter and early spring.

Proper grazing and pasture management are needed to produce plants attractive to waterfowl. When different stocking rates are used, plants show a variety of growth stages. Heavy grazing pressure followed by a satisfactory period of rest promotes sub-climax plants and retards the growth of brush species. Overgrazing reduces important seed-producing grasses such as barnyardgrass, sprangletop and panic grasses.

Harvested milo and corn fields are also important wildlife habitat. After harvest, milo is usually shredded and plowed under in preparation for the next year's crop. But with only slight changes in this practice, a tremendous amount of wildlife food can be produced. For example, if milo stubble is left standing a sucker head will regenerate and within just a few weeks there will be food for waterfowl as well as for dove, quail and pheasants. If milo stubble is shredded and rain follows, a second crop of milo will develop. To maximize the amount of wildlife food produced, farmers can mow some sections of the harvested field, plow under some sections and leave some stubble standing. Geese land in plowed areas or in wet depressions in the field and walk into the stubble. These management practices are most beneficial to wildlife if carried out over a large area by many farmers. Because of potential problems with aflatoxin poisoning, waste corn should not be left in the field unless the corn has been properly tested.

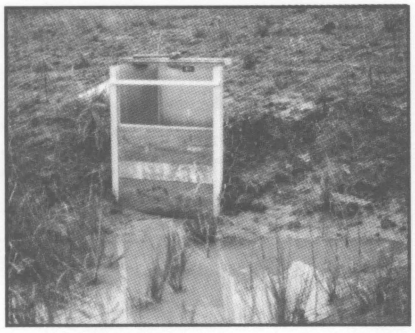
When harvested milo is left standing a sucker head will regenerate and provide food for waterfowl and other wildlife.

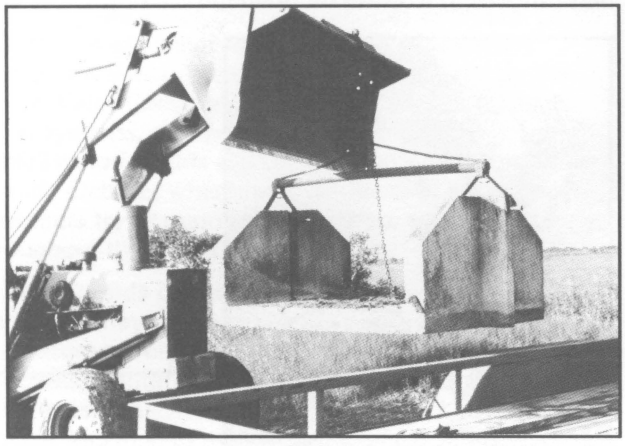
The standard practice of plowing under corn stubble is recommended.

Depressional Wetlands

Depressional wetlands are perhaps the most common natural wetlands on the rice prairies. These areas vary in size from less than half an acre to more than 100 acres, and hold water except in severe droughts. Many of these wetlands occur in crop or pasture lands, and have been altered by drainage ditches and land leveling. Often these areas can be restored simply by hand shoveling to close off drainage ditches. Other de-

Depressional wetlands can be enhanced by shoveling levees closed (top), building up exterior levees with levee plows (middle) or installing water control structures (bottom).



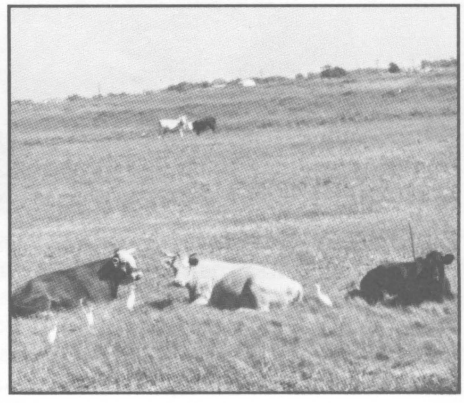


Water control structures such as flashboard risers (top), screw gates (middle) and concrete boxes (bottom) are used in wetland development projects.

pressional wetlands can be enhanced by constructing exterior ring levees with a levee plow.

To enhance depressional areas it may be necessary to use bulldozers, maintainers or back-hoes, and to install water control structures such as flashboard risers, screw gates or concrete boxes. The SCS will help with levee design and with determining the types of control structures needed for wetland development projects.

Undesirable pond vegetation such as cattail may become a problem. If so, disking, burning or chemical control of problem plants may be required to encourage the growth of native plants attractive to waterfowl.

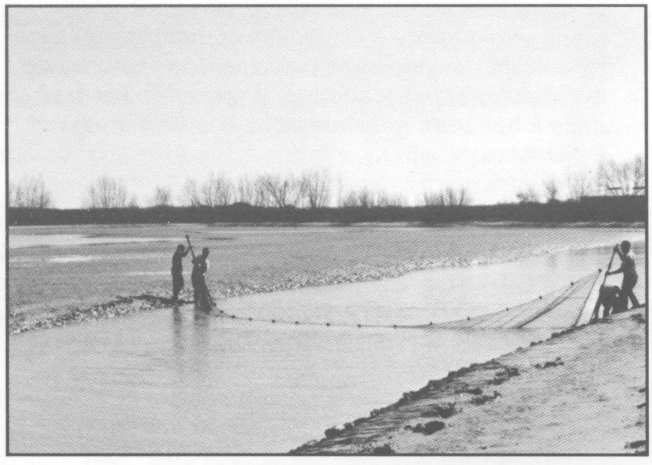


Burning, mowing, disking and grazing are management tools used to create more open and attractive waterfowl habitat.

Even when undesirable plants are not a problem, burning, mowing, light disking or rotational grazing creates more open and attractive waterfowl habitat. However, before the habitat is mechanically manipulated, it is wise to consult the federal "baiting" regulations (see section on "Legal Issues").

Stock Tanks and Reservoirs

Stock tanks and reservoirs provide good waterfowl habitat when constructed and managed properly. Stock tanks should have gently sloping basins and as much shallow water as possible. Ideally, 30 to 50 percent of the water surface area will be no more than 18 inches deep. During dry periods the water recedes to expose the shallow areas, providing a place for important food plants such as smartweed, barnyardgrass and sedges to germinate. Late summer or fall rains may flood the vegetation and create good waterfowl habitat. However, prolonged cattle grazing can harm waterfowl food plants, so intensively managed wetlands should be fenced from livestock and grazed only periodically.



Reservoirs with turbid water need to be drained periodically and the rough fish removed.

Shallow reservoirs can produce an abundance of food plants such as pondweeds or duckweed. Reservoirs that contain fish need to be drained and renovated periodically, and after drawdown they can be planted in supplemental waterfowl foods such as Japanese millet. Reservoirs overgrown with rank vegetation can be drained and then burned or disked to set back succession.

Moist-soil Impoundments

Moist-soil impoundments are areas built to hold shallow water that is removed from the soil surface at some point during the growing season and then returned to the land when plants are dormant. These impoundments support wetland plants which are valuable food and cover for waterfowl. Wide cuts in fallow rice fields and creek bottoms can be converted to moist-soil impoundments by building levees, installing simple water control structures and providing reliable water sources. However, this procedure is not economically feasible if dependable water sources do not already exist.

Drawdowns performed in the spring allow the soil to dry sufficiently for seed production. In the long growing season of the rice prairie region, seed production is

Moist soil impoundments are created to provide waterfowl food through periodic manipulation of the water.

possible in both spring and late summer. Irrigation during the growing season often is desirable. Reflooding these areas with 12 to 18 inches of water in the fall, before waterfowl arrive, makes the seed available to dabbling ducks such as green-winged and blue-winged teal, mallards and pintails.

When developing moist-soil impoundments, it is a good idea to create several compartments so that drawdown timing can vary. This encourages plant diversity. One method is to continuously flood one area while practicing early and late drawdowns in other areas. Also, upper compartments can be used to store water for irrigating lower moist-soil units.

Moist-soil impoundments may be invaded by undesirable plants such as willow or cattail, which compete with desirable seed-producing plants. Dense growths of undesirable plants also eliminate the openings favored by ducks. Burning, grazing, mowing, disking or rolling down vegetation, when combined with proper herbicide application, can help reduce these problems. Flooding nuisance plants with deep water for several days also can provide adequate control.

Moist-soil impoundments used in crawfish farming can, if properly designed, produce more than 1,000 pounds per acre of crawfish while providing excellent waterfowl habitat. Some farmers now grow rice and crawfish in alternate seasons during the annual cycle, while others rotate rice, milo, soybeans and crawfish over a 2-year period.

Legal Issues

Questions about the manipulation of crops for waterfowl hunting often arise. The purpose of federal "baiting" regulations is to stop the use of feed to lure concentrations of migratory birds into a particular area for hunting purposes. The Code of Federal Regulations 50-20.21(i) defines baiting as the following:

"No person shall take migratory game birds:

By the aid of baiting, or on or over any baited area. As used in this paragraph, "baiting" shall mean the placing, exposing, depositing, distributing, or scattering of shelled, shucked, or unshucked corn, wheat or other grain, salt, or other feeds so as to constitute for such birds a lure, attraction or enticement to, on, or over any areas where hunters are attempting to take them: and "baited area" means any area where shelled, shucked, or unshucked corn, wheat or other grain, salt, or other feed whatsoever capable of luring, attracting, or enticing such birds is directly or indirectly placed, exposed, deposited, distributed, or scattered: and such area shall remain a baited area for 10 days following complete removal of all such corn, wheat or other grain, salt, or other feed. However, nothing in this paragraph shall prohibit:

(1) The taking of all migratory game birds, including waterfowl, on or over standing crops, flooded standing crops (including aquatics), flooded harvested croplands, grains found scattered solely as the result of normal agricultural planting or harvesting: and

(2) The taking of all migratory game birds, except waterfowl, on or over any lands where shelled, shucked, or unshucked corn, wheat or other grain, salt, or other feed has been distributed or scattered as the result of bona fide agricultural operations or procedures, or as a result of manipulation of a crop or other feed on the land where grown for wildlife management purposes: Provided, that manipulation for wildlife management purposes does not include the distributing or scattering of grain or other feed once it has been removed from or stored on the field where grown."

Special attention must be given to "normal agricultural" practices. County Extension agents can be consulted for authoritative advice on "normal" practices in any particular area. Each case should be judged independently, and if questions arise, local State Game Wardens or Federal Special Agents should be contacted.

Recommendations

More than 2 million waterfowl winter in the prairies of the Texas rice belt each year. These waterfowl depend on the agricultural practices and land-use patterns of private landowners throughout the region. Ducks and geese depend on waste grain and native vegetation for food, and on water available to them in roost ponds, tanks and other wetlands. Thus, the rice prairies constitute invaluable wintering habitat.

The U.S. Fish and Wildlife Service set up the North American Waterfowl Management Plan to encourage private landowners to help increase waterfowl populations by improving habitat on their lands. Economic incentives provided by government agencies and private organizations, plus the income gained through leasing land for active and/or passive recreation, can supplement the private landowner's income.

Private landowners can increase the attractiveness of their land to waterfowl by using certain agricultural practices, by manipulating water use patterns, by enhancing established habitat and by creating new habi-

tat. Technical, and sometimes financial, assistance is available through local offices of the Soil Conservation Service, Agricultural Stabilization and Conservation Service, U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department and private organizations such as Ducks Unlimited and Wetland Habitat Alliance of Texas.

Private landowners control the future of waterfowl in Texas. Private landowners, government agencies and conservation organizations must cooperate to ensure that waterfowl will be around for future generations to enjoy.

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