

NATURAL RESOURCES CONSERVATION SERVICE
MONTANA CONSERVATION PRACTICE SPECIFICATION**WETLAND WILDLIFE HABITAT MANAGEMENT (ACRES)****CODE 644****BACKGROUND**

Wetlands—although often limited in extent on the landscape—perform many critical functions including flood control, water quality enhancement, shoreline stabilization and water storage. In addition, wetlands provide fish and wildlife habitat for many wild and domestic animals. It is NRCS policy to conserve these valuable wetland functions.

NRCS policy for technical assistance within wetlands is described in GM 190, Part 410.26. The Wetland Conservation Provisions of the 1985 Food Security Act, as amended, limit wetland alterations for agricultural producers who wish to remain eligible for various USDA Farm Program benefits. In addition, Clean Water Act, Section 404 permits are required for landowners that deposit dredged or fill materials into waters of the United States—including wetlands. Water rights must be obtained for many wetland creation, enhancement and restoration activities necessary for wetland wildlife habitat development.

The primary purpose of wetland habitat management is to provide identified seasonal and yearlong habitat requirements for waterfowl, marsh, and shorebirds, as well as many other wetland-dwelling species. Habitat requirements can be met by natural or artificially created wetlands in combination with upland vegetation for nesting and security cover.

WETLAND WILDLIFE

Wildlife habitat needs are best supplied by *wetland complexes*, which include wetlands of varying sizes and depths. Saturated and temporarily, intermittently, seasonally and semi-permanently flooded wetlands warm up early in the spring stimulating rapid invertebrate production to feed migrating and breeding waterfowl and shorebirds. Small, scattered ponds also provide isolation for territorial breeding pairs. Deeper intermittently, semi-permanently, permanently flooded and intermittently exposed wetlands provide open water and emergent vegetation, which serve as foraging and cover areas needed by waterfowl broods and molting adults. Other breeding water birds—including several species of grebes and rails, Franklin's gulls, marsh wrens, yellow-headed blackbirds, American avocets, black-necked stilts and white-faced ibises—rely heavily on semi-permanent wetlands. Wetland complexes consist of scattered ponds of various sizes and depths or larger wetlands with irregular, gradually sloping shorelines. The "U.S. Fish and Wildlife Service "Classification of wetlands and deep water habitats of the United States" found in the field office reference file, describes the wetland water regimes referenced above.

The most common varieties of waterfowl and other wildlife in Montana that use wetlands include:

Dabbling (puddle) ducks:

Mallards, gadwalls, three teal species, pintails, American widgeon and northern shovelers feed in shallow water by reaching just under the surface to obtain invertebrates and plant parts. Optimum foraging depth is 2-10 inches—depths up to 24 inches are suitable. These waterfowl species are common to a variety of Montana wetland types. Typical breeding pair habitat includes small ponds, ditches, streams, and larger wetland basins. Important qualities for brood-rearing habitat include permanent water and emergent vegetation cover. These species commonly nest in upland vegetation adjacent to the wetland. Some species, including pintails and mallards, may nest up to a mile or two from water. Residual plant litter from previous years is important for nest cover. Relatively large blocks of herbaceous cover are important to protect nests and broods from predators.

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Cavity nesters:

Wood ducks, goldeneyes, buffleheads, and hooded and common mergansers nest primarily in tree cavities along streams and forested wetlands. Nesting habitat requires suitable snags or nest boxes located within 200 yards of permanent water. These species, except for the wood duck, feed by diving in streams and ponds to obtain aquatic insects and fish. Wood ducks are surface feeders, which take a variety of plant materials as well as insects.

Diving ducks:

Ruddy ducks, redheads, canvasbacks, ring-necked ducks, and lesser scaup dive below the surface of various wetlands to feed. These species nest primarily over water in the cover of emergent vegetation. Relatively large wetlands (semi-permanent, permanent, intermittently exposed) with a 50:50 ratio of open water and emergent vegetation represent quality breeding and brood-rearing habitat for these species. Diving ducks do not require deep water to feed. Quality dabbling duck brood habitat is suitable for divers. Several species of grebes and the common loon also share these habitat requirements.

Canada Geese:

Canada geese nest along ponds, rivers, lakes, and reservoirs. They are early nesters and prefer islands for nest sites. Geese are readily attracted to a variety of artificial nest structures. Brood-rearing sites should contain access to relatively safe (open, good visibility) grazing areas with open water nearby.

Shorebirds and wading birds:

Many species of shorebirds and wading birds make use of wetlands, either as migrants or seasonal residents. Dowitchers, a variety of sandpipers, yellowlegs, and plovers, for example, feed in very shallow water and on mudflats. American bitterns, sora rails, and black-crowned night herons depend on dense emergent vegetation such as cattails and bulrushes for nesting and escape cover. The dynamics of flooding, drought, fire, grazing, and non-use periods create habitat conditions favoring different species groups over time by providing a continuum of mudflats, shallow water, dense emergent vegetation, and deep, open water.

Other wetland wildlife:

Wetlands provide habitat for hundreds of wildlife species other than waterbirds. Many songbirds (i.e., Lincoln's sparrow and marsh wrens), mammals (i.e., raccoons, muskrats, mink, and otters), and a wide variety of amphibians, reptiles, and invertebrates depend on these rich habitats. Pheasants and white-tailed deer often use dense stands of cattails for winter cover. Wetlands also provide a relatively dependable source of forage for grazing animals.

DEVELOPMENT OF PONDS, DIKES, LEVEES, DUGOUTS, AND DITCHES

1. The purpose of wetland habitat development is to restore, enhance, or create wetland complexes for migratory and breeding waterfowl, wading birds, and other wetland species. Establishment of upland nesting cover is crucial for successful wetland wildlife production.
2. All earthwork and water control structures will comply with existing specifications for practices such as ponds, ditches, dikes, etc. Refer to the Part 650, Engineering Field Handbook, Chapter 13, Wetland Restoration, Enhancement, or Creation. All areas disturbed during construction will be promptly re-vegetated with adapted plant materials to minimize erosion. Topsoil from disturbed areas will be salvaged for subsequent use as a seed source and rooting medium for revegetation.

NOTE: Underlined items above are required for meeting the Field Office Technical Guide (FOTG), Section IV, Practice Standard, Wetland Wildlife Habitat Management (Code 644).

3. When used, water control structures will allow for complete drainage of artificial impoundments to allow for wetland management activities. Water control structures will be installed according to FOTG, Section IV, Practice Standard, Structure for Water Control (Code 587).

4. Wetland Habitat Developments:

Waterfowl brood ponds will be a minimum of one acre in size. Breeding pair ponds can be smaller. Attempt to provide at least one acre of pair water within one-half mile of nest cover. This could be provided by a number of small, isolated basins or as the irregularly shaped, shallow zone of a deeper wetland.

- For dabbling ducks, provide a minimum of three acres of upland nesting cover for every acre of wetland. Nesting cover will be within one-half mile of brood water. Blocks of nest cover at least 40 acres in size are necessary to minimize nest predation.
- Attempt to create a 50:50 ratio of open water to emergent vegetation in a mosaic pattern to intersperse cover in the pond. This “hemi-marsh” condition can be achieved by designing an irregular pond bottom with 50 percent of the area less than three feet deep. Design a gradually sloping shoreline. Part of the shoreline should have a 6:1 or flatter slope. Emergent vegetation and/or tall, dense vegetation in adjacent uplands are essential for broods and molting birds to avoid predators.
- Wetlands within crop fields will be bordered on all sides by a perennial herbaceous buffer not less than 50 feet wide to reduce sedimentation, improve water quality, and filter out pesticides.
- Grazing management on the wetland habitat management area will be adequate to provide residual cover for early spring nesters. As a last resort only, fence the pond and a buffer of nest cover to exclude livestock. This may cause waterfowl and other ground-nesting birds to concentrate nests in the un-grazed area, which makes them more vulnerable to predation.
- Preferred plant materials for wildlife cover include:
 - **Grasses for upland cover:** basin wildrye, tall wheatgrass, pubescent/intermediate wheatgrass, switchgrass, western wheatgrass, green needlegrass, Indian ricegrass, bluebunch wheatgrass, slender wheatgrass, thickspike wheatgrass, and little bluestem.
 - **Grasses for wetland soils:** Barnyard grass, American sloughgrass, and a variety of sedges, bulrushes and rushes.
 - **Forbs for upland cover:** alfalfa, birdsfoot trefoil, yellow sweetclover, small burnet, sanfoin, cicer milkvetch, purple prairieclover, and Maximilian sunflower.
 - **Shrubs for nesting cover on islands:** Wood’s rose, snowberry, golden current, rabbit brush and big sagebrush.
 - Refer to FOTG, Section IV, Practice Standard, Upland Wildlife Habitat Management (Code 645) for recommended waterfowl nesting cover seed mixtures.
- Islands do not provide predator-safe nest sites unless at least 100 (preferably 300-400) feet of open water, at least three feet deep, separates the island from the mainland.
 - Islands should not be located more than 1,500 feet from shore.
 - Islands will have a settled height of two to three feet above the average high water level.
 - Islands will have a 20-foot minimum diameter (50 feet or more is preferable).

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- Side slopes on islands will be as near 5:1 ratio as possible.
- Place islands within the same wetland at least 300 feet apart to prevent island hopping by predators.
- Use of low shrubs—such as snowberry and Wood's rose—for island nesting cover will help minimize waterfowl predation and nest colonization by California and ring-billed gulls.

HABITAT ENHANCEMENT OF EXISTING WETLANDS

1. Pits and Shallow Dugouts

- Primary purpose is to create open water habitat in areas where emergent vegetation, primarily cattail, has filled in or where more wetland habitat diversity is desirable. Open water can be created using heavy equipment such as a dragline, tracked excavator, or explosives—NRCS personnel will not participate in blasting operations.
- Dugouts should generally not be constructed in wetlands less than five acres in size.

Design criteria and engineering specifications for shallow dugouts are the same as for the FOTG, Section IV, Practice Standard, Pond (Code 378), except as modified below:

- Shallow dugouts may be developed within saturated and seasonally or semi-permanently flooded wetlands or in the shallow marsh zone of wetland, intermittently, semi-permanently, permanently flooded and intermittently exposed water regimes.
- Low productivity often limits the value of dugouts to waterfowl. Shallow water is a critical component if the dugout is to provide wetland wildlife habitat. One side of the dugout will have a slope of 5:1 or flatter. The remaining sides should have close to a 3:1 slope. Minimum design depth will be three feet; maximum depth will be eight feet. At least 25 percent of the dugout will be no deeper than 3.5 feet.
- Shallow dugouts occurring within cropland fields must be surrounded by a perennial herbaceous buffer not less than 50 feet wide.
- Pastures containing shallow dugouts must be grazed according to a prescribed grazing plan, which assures that residual herbaceous cover exists for early spring nesters, or be excluded from grazing.

2. Level ditching

- The purpose of level ditching is to create open water areas for breeding and migrating waterfowl. The usual application is to create open water in monotypic cattail stands.
- Level ditches may be constructed in saturated and seasonally or semi-permanently flooded wetlands or in the shallow marsh zone of wetland, intermittently, semi-permanently, permanently flooded and intermittently exposed water regimes wetlands where normal groundwater levels are within one foot of the surface or higher during the growing season.
- Level ditches will not be constructed in soils having the following textures: sands and loamy sands, sandy loams underlain by loamy sands, or sands at shallow depths.
- Ditch dimensions:
 - Minimum bottom width is four feet.
 - Minimum water depth is 4 feet; maximum depth is 6 feet.

- Side slopes will be at a 3:1 ratio or flatter.
 - Construction
 - Ditches will be constructed without channel grade.
 - Place spoil at least 10 feet back from the ditch. (Clean Water Act, Section 404, requirements may require placement of spoil outside of the wetland.)
 - Place spoil on alternating sides of the ditch every 100 feet. If alternating the side of placement is not feasible, leave openings in the spoil bank at approximately 50-foot intervals.
 - Ditch length will vary on a case-by-case basis; however, in no case will level ditch construction cause wetland drainage.
 - Spoil banks will be shaped and re-vegetated.
 - Parallel level ditches will not be spaced closer than 200 feet.
 - A continuous ditch will not be constructed in a straight line for over 100 feet. A zigzag pattern is desirable.
3. Nest Structures
- Artificial nest structures may be used to enhance waterfowl nest success on wetland management areas. Commonly used nest structures include floating or pole-mounted baskets or barrels, round straw or hay bales placed on end in the water, and earth-filled culverts placed on end in water.
 - Nest structures should be installed prior to ice-out to assure acceptance by Canada geese or mallards.
 - Culverts stood on end in the pond should be filled with gravel to within a few inches of the top and the remaining volume filled with topsoil. Seed or straw mixed into the surface soil will usually result in self-maintaining nest cover in the form of volunteer vegetation.
 - Nest material in baskets or barrels should be replaced annually prior to the nesting season.
 - Contact the NRCS state biologist or partner agency biologist for nest structure design specifications.

PROTECTION OF EXISTING WETLANDS

1. Wetlands will not be drained or filled.
2. Wetlands will not be mowed, burned, grazed, or cropped unless done under a habitat management plan designed to improve habitat for wildlife.
3. Wetlands will not be treated with herbicides unless needed to control noxious weeds or as part of a planned program to improve wildlife habitat conditions.

WETLAND HABITAT MANAGEMENT

1. Wetland wildlife habitat may require periodic management to maintain productivity. The needs of the target wildlife species and site-specific goals will determine the type of management activity required. Following are some general management considerations necessary for maintaining quality wetland habitat:

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- Soil erosion within the wetland unit (wetlands and associated uplands) will be controlled within tolerance limits to prevent excessive sedimentation and to maintain water quality. This may involve prescribed grazing, crop residue use, or vegetative buffers around the wetland (50-foot minimum), etc.
- Water supplied will be of sufficient volume and quality to meet the purpose of the wetland habitat unit.
- Maintenance of levees, ditches, dikes, and water control structures is required to maintain design capacity.
- Water level manipulation may be required to produce and/or control specific wetland vegetation and to maintain productivity in the pond.
- Threatened and endangered species or their habitats will not be adversely affected by activities completed under this practice.
- When possible, fluctuating water levels should be avoided during the nesting season to avoid loss of waterfowl and other water bird nests.
- Where fields are to be flooded to create open water, soils will have infiltration rates of low to moderately low.
- Prescribed grazing, designed to provide for the needs of ground-nesting birds, is preferable to fencing off small areas around wetlands and stock ponds.

2. Wetland vegetation management

- Emergent vegetation—particularly cattail (*Typha spp.*)—can increase in wetlands at the expense of the open water component. A 50:50 ratio of emergents to open water is generally considered optimum habitat for a variety of wetland wildlife species. Control of emergent vegetation may be required to maintain wetland wildlife habitat.
- Cattail roots obtain oxygen through porous tissue in the leaves and stems called aerenchyma. Even standing dead leaves and stems of cattails are capable of supplying oxygen to living shoots because they are connected to the rhizomes. A general principle of cattail control is to cut off the oxygen supply to the roots by grazing, mowing, burning, or disking standing leaves and stems followed by flooding during the growing season. This also prevents cattail seed germination since the seeds cannot germinate in greater than one-half inch of water.
- Another control method involves disturbing the cattail plant during the period when carbohydrate reserves are at the lowest level. This occurs during a three-week period centered on when the pistillate cattail flower spike is lime green in color and the staminate spike is dark green. Grazing, mowing, etc., during this time limits the amount of starch stored in the plant for the following year's growth.

For difficult cattail control situations, mechanical treatment may be required. This involves drying the pond, burning the residual cattail material, disking the pond bottom two to three times during the growing season, and re-flooding the following spring. Cropping the area for one or two seasons may be necessary in some cases.

- Chemical treatment of dense cattail stands can be effective. These chemicals will be labeled for use in wetlands and applied according to the manufacturer's recommendations shown on the label. All applicable federal, state, tribal, and local laws and regulations will be followed.

Emergent vegetation control will be carried out in a manner that maintains a mosaic pattern of open water and the plant community to the extent possible.