

ASSISTING PRIVATE LANDOWNERS WITH WETLAND HABITAT DEVELOPMENTS IN CALIFORNIA

Scott E. Frazer^{1/}
Soil Conservation Service
745 "J" Street
Los Banos, CA 93635

Gary W. Kramer^{2/}
U. S. Fish and Wildlife Service
P.O. Box 2176
Los Banos, CA 93635

ABSTRACT.

Maintenance of viable waterfowl populations in California depends on optimum management, operation, and maintenance of the state's limited wetland habitats. The majority of California's remaining wetlands are in private ownership, primarily waterfowl hunting clubs. Technical assistance by agency professionals often produces significant benefits to the waterfowl resource in the form of improved habitat conditions. Assistance also helps maintain waterfowl hunting success so that landowners have an incentive to perpetuate private wetlands. Assistance is provided to private landowners by state and federal agencies through dissemination of information, funded wildlife programs, preparation of management plans, and engineering designs. Specific help must be tailored to the needs of the property and its owner. Management goals must be mutually agreeable to landowners and professionals before reconnaissance of physical features occurs and habitat improvement plans are written. After plans are developed, thorough implementation is facilitated by frequent landowner contact.

INTRODUCTION

Since the turn of the century California's wetlands have diminished at an alarming rate. Historically, 4 to 5 million acres of wetland habitat existed in California; today, only 410,000 (8 percent) of the original acres remain (California Department of Fish and Game 1983). Of the remaining acreage, 55 percent is privately owned, primarily by waterfowl hunting clubs, while the balance is managed as State Wildlife Areas and Federal National Wildlife Refuges (Anderson and Kozlik 1964; Gilmer et al. 1982). Most private wetlands in California are maintained to perpetuate the traditions associated with waterfowl hunting. Without hunting, the incentive to maintain private wetlands would largely be lost and California's private marshes would decline dramatically. Both state and federal biologists agree that there is already a shortage of wintering habitat in California relative to available Pacific Flyway breeding habitat (Shannon 1964). This imbalance has reached a point where wintering habitat may be limiting the populations of some Pacific Flyway waterfowl species (Gilmer et al. 1982). Proper management of the remaining wetlands also is critically important to the welfare of millions of waterfowl, and to numerous other game and nongame species.

^{1/} Present address: Soil Conservation Service, 120 East Tehachapi Boulevard, Tehachapi, CA 93561

^{2/} Present address: U. S. Fish and Wildlife Service, P.O. Box 120, Calipatria, CA 92233

Because of the tremendous loss of wetland habitat in California, public agencies must provide assistance and guidance to private landowners so they can maintain and improve the carrying capacity of their wetlands. Habitat maintenance and enhancement on private hunting clubs allow more wildlife to subsist on a reduced habitat base and helps maintain waterfowl hunting success so that landowners retain the incentive to perpetuate private wetlands. Private landowners often are willing to upgrade wetland quality and, at times, to expand acreage if professional guidance and financial assistance is provided. This paper deals with public agency technical assistance programs available to private wetland owners, primarily waterfowl hunting clubs.

ACKNOWLEDGMENTS

We kindly acknowledge the comments provided by F. Paveglio, R. Schultze and G. Zahm on early drafts of the manuscript.

SOURCES OF TECHNICAL ASSISTANCE

Assistance to private landowners is available on request from several sources, including both state and federal agencies. The California Department of Fish and Game is probably the source best known to most private waterfowl hunting clubs. Unit biologists, usually assigned to a one or two county area, will consult with club owners to plan habitat improvement projects. These biologists and regional Fish and Game offices also provide publications on wetland development techniques.

The U. S. Fish and Wildlife Service, USDI, best known for its management of National Wildlife Refuges, has biologists stationed at San Luis and Sacramento National Wildlife Refuges specifically to provide technical assistance to waterfowl hunting clubs in California. These biologists also administer a conservation easement program in the Central Valley. Easement program payments made to private hunting clubs, for reservation of all developmental rights (Kramer and Helvie 1983), often are used for habitat improvement projects.

The Soil Conservation Service, USDA, has field offices in most counties throughout California. Technical information is provided to individuals through groups of local landowners organized into Resource Conservation Districts. In Districts where private wetlands occur, biologists, soil conservationists and engineers are available for consultation on wetland improvement. Management plans, publications, engineering surveys and designs can be provided. Technical assistance for the USDA Water Bank Program is also carried out by the Soil Conservation Service.

The Agricultural Stabilization and Conservation Service, USDA, provides funding to private landowners for the Water Bank Program and cost sharing of conservation practices, including wildlife habitat development work. Programs are administered individually in each county, with allocation of funds dependent on the county committees and the number of requests. This organization does not have a technical advisory staff, but the Soil Conservation Service will provide technical assistance to implement approved cost-shared projects and other conservation practices.

In areas where waterfowl hunting clubs are concentrated, such as the Merced County grasslands and the Sacramento Valley, two or more of the previously mentioned public agencies often cooperate in developing a wetland improvement project on private land. It is important to note that while these agencies provide technical advice or funding, they do not carry out the improvement work itself. These improvements must be done by the landowners or by private contractors.

HABITAT MANAGEMENT ACTIVITIES

There are four major types of habitat management activities that occur on private wetlands. Landowners often lack the technical expertise to plan these activities and therefore seek and utilize assistance from public agencies. The following discussion briefly identifies the most common habitat management activities.

WATER MANAGEMENT

Proper water management is the most critical factor in the efficient operation of a wetland area. Without a firm water supply, an adequate internal water distribution and circulation system, and the ability to control water depth and adequate drainage, other management activities become exceedingly difficult.

Water supply is generally determined by water districts, well displacement or natural run-off. In most areas, little can be done to economically increase water supplies or reduce run-off during floods, but water conservation measures can provide an opportunity to increase water availability.

Ideally, water that enters the wetland area should be totally controllable. Each pond within the system should have an independent means of water delivery and drainage. If this does not presently occur, the construction of additional water delivery ditches and drainage ways may be necessary. It may be necessary to replace or install new water control structures to allow independent water control within each pond. Improved drainage is often a major feature of habitat improvement plans. Without adequate drainage it is difficult to produce desirable waterfowl food plants and to maintain water circulation through the ponds. Circulation of winter water is important in areas where alkali salts build-up. Where this occurs, flushing is needed to maintain desirable plant growth and diversity.

Also necessary for good water management is the control of water depth within each pond. Under most conditions in the Central Valley, it has been found that water depths ranging from 4 to 10 inches provide optimum habitat for those waterfowl species most often hunted (puddle ducks) on private wetlands. The majority of private wetland enhancement projects are geared toward more specific water level management. If ponds are 2 inches deep at one end and 2 feet deep at the other, proper pond management and drainage are difficult. This situation may call for pond bottom shaping, to remove soil from higher portions of the bottom and fill deeper areas, or contoured levees to split two areas of differing elevations. Some deeper ponds may be managed for habitat diversity, if water supplies are adequate.

GRAZING

Historically, many wetland areas have been grazed by livestock. In the San Joaquin Valley, grazing is often the dominant agricultural use of wetlands. While some duck clubs are opposed to livestock grazing, others have a long association with grazing, or believe the revenue is essential to their club's operation.

Grazing affects wildlife habitat, and can range from beneficial to devastating depending on stocking rates, grazing season, and location of use. Properly controlled livestock grazing seasons and intensity can accomplish habitat management goals while generating revenue. However, to obtain beneficial results from grazing, a club must develop a written lease that limits livestock numbers, the season of use, and the amount of summer water applied. The cattle operator often has goals which are vastly different from the wetland owner. While high stocking rates and abundant summer water produce fat livestock and profits, they can also increase the club's levee maintenance and vegetation control costs, and degrade waterfowl habitat.

VEGETATION CONTROL

Most waterfowl clubs require some vegetation control work annually. The most effective means of vegetation control is consistent and methodical water management. The amount of water and its duration of ponding on an area will determine which plant species dominate. Therefore, any vegetation control efforts must be coordinated with water management.

Mechanical means of vegetation control include mowing, plowing, discing and grading (releveling). Mowing is a short term solution to remove accumulated vegetation and residues. Mowing does not affect the root mass or significantly alter the regrowth of undesirable species (cattail, roundstem tule and juncus). Also, most mowing is done in mid-summer or early fall after plants have completed their reproductive cycle and are storing energy reserves in the roots. Regrowth or green-up after mowing is a problem, particularly on

soils with a high water table. Control by mowing can be increased by burning areas of dense residues with a slow, hot, back fire. The intense heat will decrease the number of viable rootstalks.

Plowing and discing are both attempts to destroy problem plants by exposing rootstalks to desiccation. Plowing will expose a larger and deeper area of the root-zone, but also creates an uneven pond bottom which makes hunter access difficult. Deep plowing may also alter the existing soil profile. The time that roots are exposed is important for success. Disturbing roots in June or July, and keeping ponds dry through September, will give good results. A minimum of six weeks of hot, dry weather is needed to justify either plowing or discing. Some landowners prefer to double disc during the summer for a smoother pond bottom and to expose roots missed during the first discing.

Chemical control is more effective than mechanical control if materials are applied at the right time during the plants' development, and are properly used. However, with herbicides, initial costs at the time of treatment usually are higher. Also, few clubs have experienced people available for proper herbicide application. Current field results have been mixed because of haphazard selection and application of chemicals.

Any attempt at vegetation control must be followed by an improvement or change in water scheduling for long term benefits. As long as conditions favoring dense growth remain, stands of undesirable vegetation will continue to occur.

WATERFOWL FOOD PRODUCTION

The production of desirable waterfowl foods traditionally has focused on seed bearing plant species, although aquatic invertebrates are also important foods. Cultivation of domestic grains can be beneficial, although the effort and expense are difficult to justify. It is generally accepted that native marsh plants, comprised of locally adapted species such as swamp timothy and water grass, will provide high quality winter waterfowl foods with minimal labor, water, equipment and expense (Connelly 1979). Water scheduling to benefit selected, naturally occurring plant species is the key to this type of management. Applying and removing water to benefit selected species also will reduce problem vegetation.

Water management and control facilities must allow close adherence to selected water schedules. To begin this scheduled management, some physical changes in the water control system often are needed. Also, some alteration of plant succession, like discing or plowing, is necessary if an area is dominated by undesirable vegetation. Water management schedules should be selected for each field. These assignments are flexible and can be changed as needed, but they give a clear goal for management of selected waterfowl food plants. Few private landowners keep detailed records on when fields are irrigated, fall flooded and drained. Such records should be encouraged so that results can be compared to management for a cause and effect relationship. Detailed records will aid in sharing management responsibilities.

Differences in pond bottom elevations and corresponding water depths should be considered when selecting desirable food plants and their water management schedules. Species which tolerate or require large amounts of water, such as alkali bulrush and watergrass, can be grown in low areas with poor drainage. Management of higher ground is more flexible and dependent mostly on availability of water for spring irrigation. Clubs are generally encouraged to provide a variety of vegetation types in different fields to increase diversity. A diverse food base is more likely to provide needed waterfowl foods throughout the fall, winter and spring.

MANAGEMENT PLANS

In cases where major construction activities will likely be needed, if substantial expenditure of club funds are required, or if habitat improvements will have to take place over more than one year, a written management plan is recommended. The preparation of a management plan should begin by meeting with the landowner to review basic property features.

Physical limitations, financial resources, photos, soils, maps and other available resource data are reviewed to evaluate existing conditions. The review of this material helps the landowner and technical advisor understand the problems and potential of the property. This first contact with the landowner establishes management goals and approaches and helps to identify the role of the public agency and landowner. For properties with numerous co-owners, all decision makers for the group should participate. This assures unanimous support by all club owners for habitat improvement activities that may be implemented at a later date.

With the landowner's goals and management direction well in mind, technical advisors must then visit the property for a thorough field reconnaissance. During the field reconnaissance it is best to have the owners and/or decision makers in attendance.

Water availability is a primary consideration because so many management options are influenced by it. Water quantity and quality records may be available from landowners or water districts, or they can be determined on site. Water costs generally are well known, although they vary greatly in California and often shape the landowner's management strategies. Proper water application, circulation, and drainage are primary considerations of wetland management on private marshes. The current status of water management on the particular property being evaluated should be thoroughly understood by the technical advisor during the early planning stages.

While evaluating the methods of water delivery and drainage, an inventory of existing water control structures, such as pipes and weirs, should be made. The condition, size and location of each structure should be noted on a sketch for future reference. Aerial photos or tracings are helpful for a comprehensive perspective. The need for repair of existing structures is noted along with any obvious need for new structures.

Vegetation on the property is the next item to be reviewed. The composition of desirable and noxious or undesirable species should be recorded. The existing vegetation will indicate past management activities, and provide insight into the capability of the land to produce additional desirable species. The problems observed often are interrelated; for example, poor drainage or delapidated water control facilities may cause undesirable vegetative growth.

The evaluation of water delivery systems, drainage, control structures, and vegetation surveys provide information used to outline the most efficient management options. The work needed can now be compiled for a preliminary cost estimate. This provides the information many landowners seek at the beginning of the technical assistance process: "What should be done and how much will it cost?" Accurate cost estimates may require engineering design and detailed topographic surveys.

Information collected is now organized, and problem areas or potential improvement work is highlighted. A review of the data with the landowner follows. It should be pointed out to the landowner that the habitat improvement process may be very slow. Although it may be possible to do all of these things in a week on small properties, the improvements more often are accomplished over a period of years. The landowners should be encouraged to decide how to proceed with management based on the information from this review. When the landowner has stated a management goal and decided what work can reasonably be accomplished, a management plan can be prepared.

In some cases the habitat cannot be managed until new facilities are installed. Some items that might be needed include cross-fencing, new or larger water delivery headgates and pipes, contour levees, canals, ditches, and drainways. It is most important to develop design plans prior to construction. A well prepared design can solve problems before construction activities begin, and will usually save money by providing precise quantitative data. Owners and contractors can then negotiate for the price of construction.

The complexity and detail of the plan will vary with the needs of each property. It can be as simple as an outline of major work items and a schedule for implementation, or it may be a detailed plan that includes aerial photographs, soil maps, habitat management guidelines, project designs, work schedules and published literature.

A series of follow-up visits by the technical advisor can be helpful for the thorough implementation of habitat improvement plans. This is particularly important when improvement projects take place over an extended period of time. Details and questions that arise can be handled during follow-up visits, and periodic reminders keep improvement work on track.

CONCLUSIONS

Many private landowners, particularly hunting clubs, are willing to improve their wetland habitats if assistance and guidance are provided. State and federal agencies carry out assistance programs which provide technical information and funding for wildlife habitat development on private wetlands. The cost to public agencies for technical assistance programs is relatively low while the resource benefits, in the form of improved habitat quality, are high.

Because California's wetland habitats are limited and because much of the remaining areas are controlled by private landowners, it is important that public agencies provide technical and financial assistance in order to maintain optimum populations of wintering waterfowl and other wetland dependent wildlife in California.

LITERATURE CITED

- Anderson, J. M. and F. M. Kozlik. 1964. Private duck clubs. Pp. 519-526 in Linduska, J. P. (ed.). Waterfowl tomorrow. U. S. Government Printing Office, Washington, D. C.
- California Department of Fish and Game. 1983. A plan for protecting, enhancing and increasing California's wetlands for waterfowl. California Department of Fish and Game. Report SCR-28.
- Connelly, D. P. 1979. Propagation of selected native marsh plants in the San Joaquin Valley. California Department of Fish and Game, Wildl. Manage. Leaflet 15: 1-12.
- Gilmer, D. S., M. R. Miller, R. B. Bauer and J. R. LeDonne. 1982. California's central valley wintering waterfowl; concerns and challenges. Trans. N. Am. Wildl. Nat. Res. Conf. 47: 441-452.
- Kramer, G. W. and J. Helvie. 1983. A federal wetland preservation program for California. Cal-Neva Wildl. Trans. 1983: 122-125.
- Shannon, W. T. 1965. Private clubs and the waterfowl resource. Trans. N. Am. Wildl. Nat. Res. Conf. 30: 255-259.