

DEVELOPING A HABITAT MANAGEMENT PLAN FOR PRIVATE LAND

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ABSTRACT.

Ray Conway has operated for 17 years the 4,400 acre Sugarloaf Ranch for quail and livestock production. This is his most recent of several similar endeavors. Gradual changes in goals over time have occurred, and a decision was made to change the management orientation to include deer, turkey, dove, band-tailed pigeon, and nongame habitat while maintaining a viable quail hunting base, all compatible with existing livestock grazing. Svoboda (1980) described a good wildlife planning process for private landowners. The present paper describes practical application of Svoboda's technique to the Sugarloaf Ranch. Each step of the process is described and the resulting plan is briefly outlined. This plan can serve as a guide to habitat development tasks that are practical and economic in the view of a rancher with over 40 years experience in private-land wildlife management.

INTRODUCTION

Increasing numbers of ranchers are leasing recreation rights, including hunting access, to increase the low rates of return on their ranch investment. They will be more effective in reaching their wildlife goals if they follow a detailed management plan. In addition, there are increasing legal and financial incentives for private landowners to make wildlife management plans. These reasons include requirements of the Forest Practices Act, the California Forest Improvement Program, the Chaparral Management Program, and the Wildlife Management on Private Lands Act. It is becoming necessary as guidance for landowners and for proper administration of these government programs to establish a standard of quality for formal wildlife management plans for private land. This standard will evolve through comparison of a number of well-prepared plans on different sites and having different objectives.

The purpose of this paper is to present one such plan which was developed partly as a demonstration of the information and quality that may be presented in an economically practical plan for a private landowner. Ray Conway intends eventually to fulfill all aspects of the plan, with or without outside financial incentive. In addition to being a graduate forester, he has a history of more than 40 years of successful private land management, including management for cattle and native wildlife, and qualifies as an expert judge of practical wildlife management on private land.

This paper is not designed to include all the details required by specific agency regulations. The purpose is to demonstrate the application of a planning process (Svoboda, 1980)

to a working ranch in California and to describe the components needed for accomplishment of the plan, including biological assessment and monitoring.

STUDY AREA

The Sugarloaf Ranch is about 20 miles east of Marysville, in Yuba County, California, near Collins Lake. It ranges in elevation from 500 to 1650 feet. It is near the lower edge of the chaparral zone and supports a plant community of mixed blue oak, black oak, digger pine, shrub live oak, and ponderosa pine. The chaparral components include shrub live oak, poison oak, buckbrush, hollyleaf buckthorn, and a number of other shrubs.

Slopes range from 2 percent to more than 50 percent, with annual precipitation about 35 inches, mostly occurring as winter rain. Snow is infrequent. Small, well-distributed springs provide permanent water, and part of the north property boundary is a permanent stream with a significant riparian zone. Historically, the flat alluvial areas supported stands of ponderosa pine, but these have been removed by a long history of logging and burning which predates the present owners.

The present owners purchased Sugarloaf Ranch 17 years ago with a primary purpose of quail hunting for themselves and guests. Revenues from wildlife and livestock grazing were to pay the operating expenses of the ranch. A wildfire swept the southern half of the ranch while it was in escrow, removing almost all vegetation in the path of the fire. Since then, Conway has managed the ranch primarily for quail production in a manner compatible with livestock production. The techniques have been described by Starker Leopold in his book "The California Quail", (Leopold, 1977) and the resulting habitat was the basis for a Cooperative Extension Leaflet, "How to Increase California Quail Populations" (Fitzhugh, 1983).

A bulldozer is used to control the size and spacing of brush and to create brushpiles for quail cover. Planting, fertilizing, and managed grazing have provided a dense annual clover stand, which provides abundant food for quail and livestock alike. In fact, controlled livestock grazing is necessary for maintenance of the clover stand, and to enable quail chicks to negotiate the dense annual vegetation.

METHODS

When Conway first decided to change his habitat management goals to include all species of wildlife, he approached wildlife biologists in Cooperative Extension and the Soil Conservation Service for advice and ideas consistent with his goals. Initial discussion reinforced the new goals that appeared biologically feasible. Additional planning was indicated.

Knowledge of wildlife on the ranch was facilitated by the fact that Richard D. Teague, formerly wildlife specialist with Cooperative Extension, and presently northern Regional Director, had worked closely with Conway for the previous 20 years and was thoroughly familiar with the ranch. Teague reviewed drafts of the plan and offered valuable comments. Fitzhugh and Zinke also had provided advice on Sugarloaf Ranch for several years previous to preparing the plan. Plan preparation was further facilitated by the fact that Zinke, SCS District Conservationist, is a graduate wildlife biologist. In addition, Conway has kept detailed records of quail harvest and notes concerning many wildlife species for the entire period of ownership. More recently, he has conducted deer counts on a transect, recording sex, age, and number seen. Therefore, this plan may be expected to be more complete, with more inventory data, than would normally be the case for the first plan written for a ranch. Furthermore, more effort on the part of a consultant normally would be required to familiarize him with local conditions than was necessary in this example.

Under different circumstances, a consultant might have been retained. Wildlife Extension, University of California, Davis, maintains a list of wildlife consultants operating in California, including their areas of specialization.

During the initial on-site visit, Zinke and Fitzhugh accompanied Conway, who related his observations of animal movements, habitat changes, and their effect on wildlife species, and pointed out where certain types of treatment would be beneficial and practical. He showed them areas of wildlife concentration and migration and agreed to provide low level oblique aerial photographs of the ranch. During this visit, general objectives and potential methods were discussed. Agencies that should be involved were identified and subsequently invited to a second, on-site inspection tour.

Several days later, the biologists visited the site alone and walked through different microhabitats, recording plant species composition and observing signs of differential wildlife use. Soil maps, topographic maps, and aerial photographs were used and are necessary. The need for the person developing the plan to become personally knowledgeable with wildlife use of habitats on the specific private land cannot be overemphasized. During the process of on-the-ground observation, preferably on foot, the trained biologist will observe evidence of wildlife use that will assist him in developing a management plan. Some of the observations will not become apparent through normal discussion, but when observed, their importance is obvious. For example, on the Sugarloaf Ranch, deer were found to be using certain very tall stands of dense brush in gullies for thermal cover.

The plant community characteristics recorded during the visits were used in a search and interpretation of the Wildlife Habitat Relationships computer program (Grenfell et al., 1982) and the California Department of Fish and Game. These programs help identify all the potential wildlife species likely to be found on the site, with any special habitat requirements and/or special legal status. Presence of species on the lists was verified through Conway's records and those of Fitzhugh and Zinke.

The purpose of the second tour was to acquaint the agencies with initial goals, objectives, and tentative methods, and to ascertain the degree of involvement they wished to have in the process. Their initial reaction was obtained to appropriateness of an application for such state-sponsored programs as the Chaparral Management Program (burning), the California Forest Improvement Program (cost-sharing for forest improvement practices), and the Wildlife Management on Private Lands Program (approval by Fish and Game Commission of private wildlife management plans). Under different conditions, it may be appropriate to consider participation in other such programs as the Forest Incentives Program or the Agricultural Conservation Program (ACP) (both administered by the Agricultural Stabilization and Conservation Service, ASCS).

Next, a joint planning session was held, including the two biologists, Conway and other experts considered helpful. In this case, Yuba County Cooperative Extension Livestock Farm Advisor Charles B. Wilson assisted with planting recommendations and cost estimates. In other situations, foresters, fisheries biologists, soil experts, or engineers might be used. At the beginning of this meeting, specific objectives were determined, using Conway's philosophy and broad goals as foundations, modified by economic constraints and biological reality. The habitat requirements of each species mentioned in the goals were reviewed and potential limiting factors were identified in the specific objectives.

Once the objectives were determined, maps of required habitat changes were sketched and objectives were re-evaluated for biological soundness and practicality. It is imperative to have site-specific information at this stage of planning. Publications and generalities will not suffice. Then, the tasks necessary to accomplish the objectives were determined and relative timing set for coordination between objectives. Monitoring methods were discussed and tentatively agreed upon and assignments were made for each person to provide missing information. The majority of these plans were outlined at the joint meeting mentioned in the paragraph above, at which Conway and other experts were important participants.

A draft wildlife management plan was developed by the Soil Conservation Service, based upon the decisions and analyses made during the two inspection tours and the joint planning meeting. The draft wildlife management plan was reviewed by the biologists and Conway prior to a second meeting; decisions for finalization were made at the meeting. Often, it will be appropriate for the other experts attending the joint planning meeting to attend this review meeting, or at least to review the draft plan.

RESULTS

Because of the site-specific nature of the plan for the Sugarloaf Ranch, it is neither possible nor particularly advantageous to reproduce the whole plan here. The major headings, the goals and objectives, a few examples of specific items and a map of the overall plan should suffice.

GOALS

Conway's overall goal was to improve wildlife habitat through use of tested practices as a demonstration to other managers and to biologists, and to provide a fair return to the ranch. Increased knowledge was to be sought through application and monitoring of untested practices.

Major Headings in the Contents of the Sugarloaf Ranch Plan---

- I. Description of Property
- II. Property History and Background
- III. Inventory of Wildlife Resources
- IV. Resource Management Goals and Objectives
- V. Project Analysis
 - A. Proposed Practices
 - B. Specific Practices, Locations, and Quantities
 - C. General Overall Plans and Ideas
- VI. Project Plans and Phases
 - A. Harvest Recommendations
 - B. Management Policies
 - C. Phase I - Fiscal Years 1984-85
- VII. Expected Results of Project and Monitoring

APPENDIX

Maps
Inventory
Environmental Analysis
Legal Description of Property

Inventories---The plan includes a report of game inventories made on the property, and describes inventory procedure for the future. Harvest records were present for the past 15 years for all species harvested. The results of a deer survey for sex and age composition, replicated 7 times in 1982-83 and 8 times in 1983-84 was supported by preliminary results of a pellet-count survey initiated in 1984 to monitor effects on deer use of the proposed controlled burning. Lists of potential wildlife species using the ranch and those known to be present were provided.

Specific Objectives---The plan includes two full pages of specific priority objectives in 6 categories. A sampling of specific objectives under each of the categories follows, numbered as in the plan:

1. Deer - Establish priority areas and improve habitat.
 - a. Controlled burning and grazing.
 - f. Tag and collar deer to determine migratory routes.
 - g. Keep accurate records on yearly deer harvested, including size, weight, numbers, and age classes (Antlerless hunting is not included in the plan at present).
2. Turkeys - Establish priority areas and improve habitat.

- a. Allow brush and other sprouting species to grow back to make good turkey habitat.
 - c. Plant woody and perennial food plants (olives and oaks are included).
 - e. Enhance insect populations for food by:
 - 1) not allowing overgrazing
 - 2) fencing key natural vegetative areas--seeps and springs, etc.
 - h. Keep records to establish success or failure of project.
3. Quail - Establish priority areas and improve habitat.
- c. Plantings:
 - 1) clovers and forbs
 - 2) mast trees and bushes
 - e. Record annual kill by sex and age.
 - j. Establish conditions to encourage mountain quail to repopulate.
4. Dove, Pigeons, Passerine birds, Avian and Mammalian Predators, and other Nongame animals.
- a. Establish food plots and control grazing:
 - 1) grain
 - 2) clover and forbs (vetch)
 - 3) trees and bushes (coffeeberry, bladderpod, etc.).
 - 4) fertilize plots and rangeland for increased production.
 - e. Maintain roost trees, dens, and other key breeding areas.
5. Water
- a. Develop springs and seeps
 - b. Develop pools in intermittent streams
 - c. Develop irrigation water for food plots
6. Fire Control and Management
- a. Disk the perimeter of the whole property yearly.
 - b. Maintain and grade all roads and establish waterbars.

Examples of Specific Items---The section of the plan on specific practices, locations, and quantities is further subdivided by each of the 6 objectives above, and those are subdivided by geographical units within the ranch. An example from the subsection on deer practices, Unit number 1 follows:

"1. Seed and fertilize - Three best areas are large centered area east of Sugarloaf Hill (109 acres), western edge of unit north of old county road (83 acres), and area north and east of Fig Tree Field (33 acres).

"2. Burning and brush manipulation - Selected small areas to be brushed and burned including small amounts on Sugarloaf Hill. Will try to establish several small plots of *Ceanothus* on north-facing slopes for browse.

"3. Water development - Good water in Turkey Ravine and in main creek south of Sugarloaf Hill where a good dam site needs to be located. Several good springs, if developed and combined together by piping to a holding reservoir, could be used for irrigation.

"4. Establish and maintain cover - Save north side of Sugarloaf and maintain most of cover in three main canyons at eastern edge of unit."

The following example is from the Dove, Pigeon, and Nongame section, Unit numbers 1 and 2.

"Best locations for plantings, fertilization, and fencing are Sugarloaf Springs field (12 acres) and South Fig Tree Field (21 acres). Plantings will concentrate on oats, rye, and other grains, vetch, clovers, and possibly safflower. Shrub planting includes coffeeberry and bladderpod for food and woody shrubs and pines for escape and roosting cover throughout property. Most trees and berry bushes will also supply valuable food. Water sources will be developed and maintained. Roost trees, dens, snags, and other key breeding areas will be maintained for all bird and mammal species. They will also benefit from the other habitat practices implemented for the other game species. Hawks, coyotes, and bobcats are protected for good natural balance. Dogs are discouraged."

Harvesting strategies were developed beginning with a consideration of ranch objectives, followed by a thorough biological analysis to determine how to reach those objectives while maintaining a healthy, viable wildlife population. This analysis included calculation of deer population dynamics based on an extrapolation from McCullough's (1979) work on the George Reserve in Michigan, as modified for California conditions. A microcomputer program developed by Dr. Reginald Barrett, University of California, Berkeley facilitated this analysis, although it was available only in time to validate and refine the analysis for the Sugarloaf Ranch. In consideration of present ranch goals, no proposal was made to hunt female deer, and the level of buck harvest had to be reduced accordingly.

Maps---Four maps were presented in the plan, each showing locations of proposed practices for one of four categories of wildlife: 1) quail; 2) turkeys; 3) deer; 4) dove, pigeons, and nongame. In addition there are soils maps, aerial photographs, and maps illustrating general location features and the route of a transect for deer composition counts. Figure 1 combines details from all four of the "proposed practices" maps to provide a visual outline of the habitat improvement portion of the plan.

DISCUSSION AND CONCLUSION

While the plan described above is considered to be practical and economically feasible by Conway, different landowners obviously will have different goals and different abilities to extract economic value from wildlife improvements. The ranch described is close to population centers and has habitat with good potential for improvement at relatively low cost. More intensive management can be justified here than on harsher sites.

While all ranchers entering the Wildlife Management on Private Lands program will not manage to this level of intensity, some of them may approach it, especially after some experience. The plan presented here is more intensive than any agency management other than that on wildlife refuges or other similar localized areas. To accomplish this level of wildlife habitat management on private lands, at private expense, and especially on lands harboring migratory game and nongame, is one of the major public benefits of the Wildlife on Private Lands bill (Assembly Bill 580, by Kelley of Hemet, Calif., 1983).

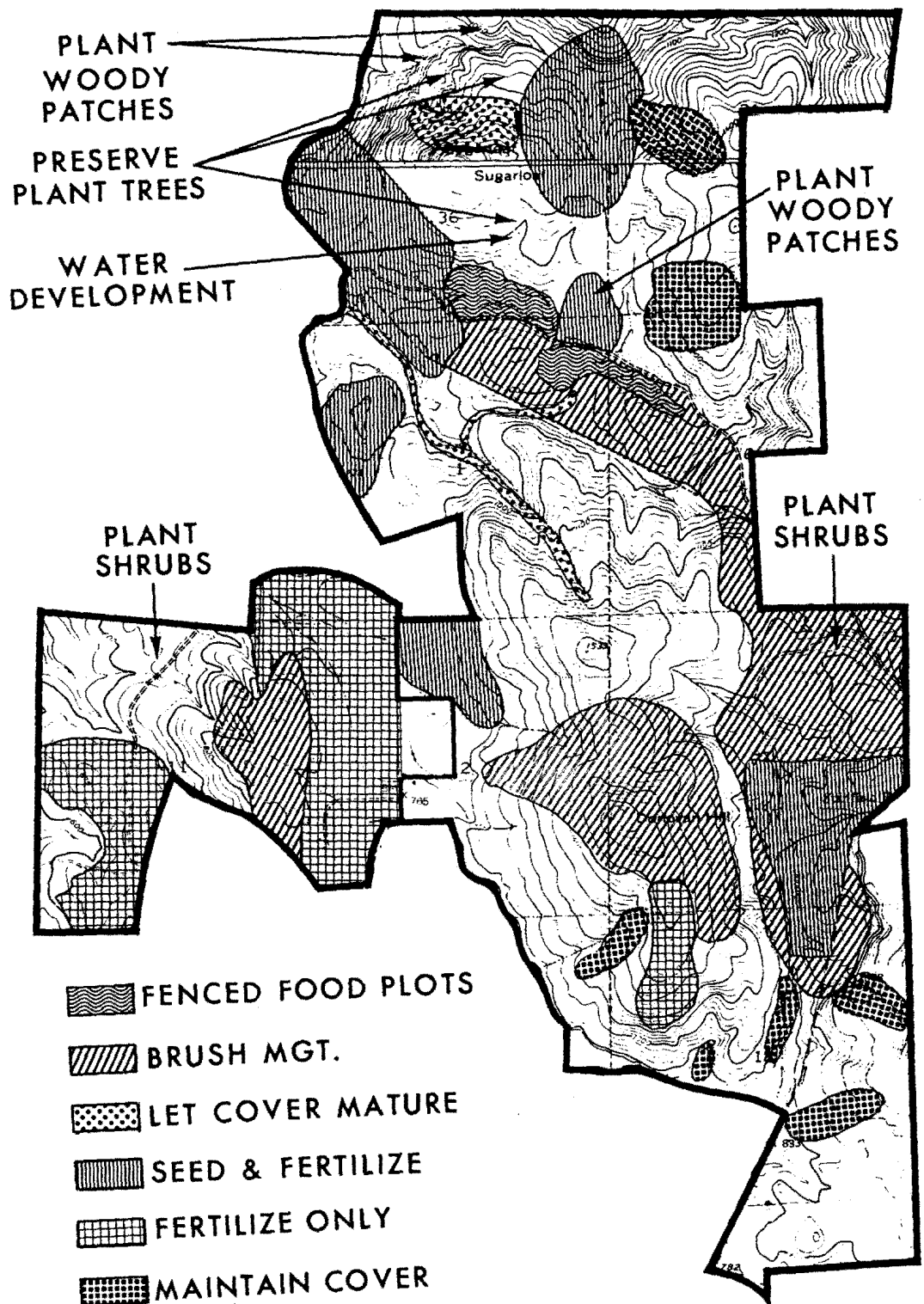


Figure 1. Planned habitat improvements for the Sugarloaf Ranch.

LITERATURE CITED

- Fitzhugh, E. L. 1983. How to increase California quail populations. Division of Agricultural Sciences, University of California Leaflet 21325. 3 pp.
- Grenfell, W. E., Jr., H. Salwasser, and W. F. Laudenslayer, Jr. 1982. The California wildlife/fish habitat relationships system. Trans. Western Section, The Wildlife Society, Reno, Nevada. Cal-Neva Wildlife 1982: 27-33.
- Jensen, D. B. 1984. Riparian systems: data base management problems and the role of the California Natural Diversity Data Base. in Warner, R. E., and K. M. Hendrix (eds.) California Riparian Systems. A conference on their ecology, conservation, and productive management. 1981. Proceedings. University of California Press, Berkeley. 1000 pp.
- Leopold, A. S. 1977. The California quail. University of California Press, Berkeley. xx + 281 pp.
- Svoboda, F. J. 1980. A wildlife planning process for private landowners. Wildlife Society Bulletin 8: 98-104.