

APPENDIX BB

BOBWHITE QUAIL

IN TEXAS



Habitat Needs &
Management Suggestions

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FOREWORD

Bobwhite quail may be found from the tip of the Panhandle to the mouth of the Rio Grande in Texas, although their principal range is considered to be from the 101st meridian eastward. Within the broad scope of this area, bobwhite's presence and abundance are dependent primarily upon the amount and quality of quail habitat which he can utilize.

Texas has more than a million hunters, and the survey conducted by the Bureau of the Census in 1960 showed that 321,000 quail hunters bagged 98 million birds. Most of these were bobwhites, and certainly this number two small game bird in Texas supplies many hours of recreation and many pounds of meat for Texas outdoorsmen.

Although climatic factors often determine the extent of bobwhite range in Texas, abnormal weather within the range may dictate the conditions upon which bob's yearly survival is dependent. Drought, floods, and other natural causes can reap a heavy toll on bobwhite populations and prove to be devastating where quail habitat is of the marginal variety. Even in high quality areas, these factors may reduce quail populations to a dangerous low. However, bobwhite is a resilient game species and his potential for reproduction permits him to make a speedy recovery, if his basic habitat requirements are maintained.

Food, water and cover are the keys to bobwhite survival. The plants providing these essentials may vary greatly from one portion of the quail range to another. Management requires that

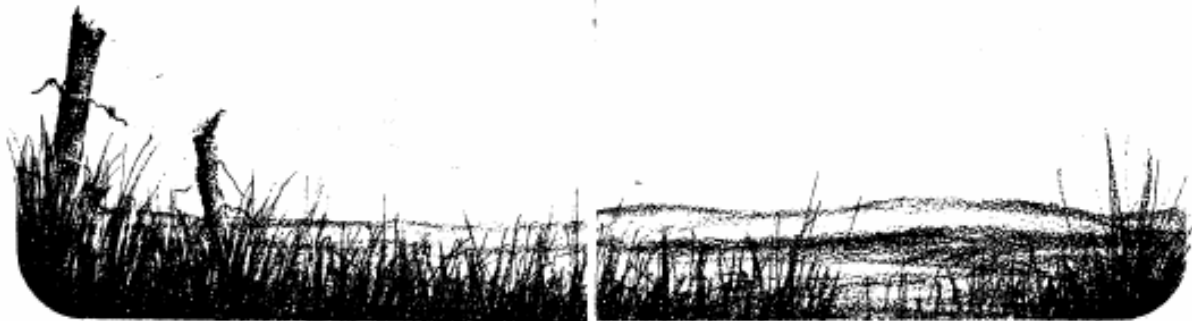
these key plants be recognized, protected, and perhaps encouraged, if bobwhites are to be produced in huntable numbers.

The purpose of this brochure is to acquaint landowners, sportsmen and other bobwhite quail enthusiasts with some specific information which may be used to improve bobwhite's lot through management of quail habitat.

Quail can be produced on land used for the production of timber, ranching or farming, if the land operator will keep in mind that bobwhite's habitat needs must be met the year round. Bobwhite's habitat requirements may be a simple matter of protection of woody cover on prairie range; shallow discing adjoining wide fence rows on an East Texas farm; or some inexpensive food and cover plantings, with protection from grazing, in a South Texas pasture.

Knowledge of quail needs does not in itself insure bobwhite's continued welfare. This knowledge, to be helpful in wildlife management, must be applied to land-use practices found throughout the quail's range.

The basic information contained in this brochure, properly utilized, can help insure to landowners and sportsmen a continued supply of bobwhite quail. Wildlife Biologists and State Wildlife Extension Biologists with the Texas Parks and Wildlife Department are available in each region of the state to assist landowners in preparing management plans for individual tracts of land which could result in increased bobwhite numbers.



WHAT IS BOBWHITE QUAIL HABITAT?

Throughout the vastness of Texas, bobwhite habitat varies in character with the differences in soils and climate. Always, whatever the make-up, quail habitat comes down to this: a piece of ground capable of providing at least one covey with all of its life needs, season after season. Bobwhite must have a year-round adequate supply of food and reasonable protection from the hazards to his kind of living. This includes protection from enemies while feeding, resting, loafing, roosting, traveling and nesting.

QUAIL MANAGER MUST REALIZE EXACTING REQUIREMENTS

The range requirements of bobwhite quail are much more exacting than are those of any kind of domestic livestock. While ranges grazed until



they are bare are readily recognized as unsuited to bobwhites, it is less obvious to most landowners and sportsmen that the other extreme, too much thick grass, can be equally detrimental to quail habitat. The latter can be barren of available quail foods and unsuitable for quail cover.

Food and cover also must occur in a "friendly" relationship to each other if they are to comprise quail habitat. That is to say, the distance between a source of ample food and adequate cover must not be greater than bobwhites can negotiate with safety. Ideally, escape cover should be linked to food supplies with more or less continuous screening cover. The latter must not be dense enough to



prove an obstacle to the bobwhite's short-legged gait. Without a suitable space relationship, a range will not be habitable for bobwhite regardless of the quality or amount of food and cover present.

Both food and cover supply must be stable or continuously renewed during the entire year. It is not enough that food and cover be adequate for 11 months, if either is lacking during a single month. This should be an obvious fact, but it is all too often overlooked during seasonal farm and ranch operations.

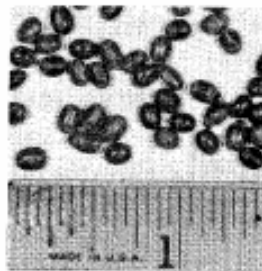
WEEDS ARE ALL IMPORTANT SOURCES OF FALL AND WINTER QUAIL FOOD

Bobwhite nearly always fares well during spring and summer months. Seeds are ripening then and food supply is supplemented by a wealth of insects and green plant material. However, from the time of the first killing frost, the supply of quail food begins to diminish. All fall and winter, other birds and rodents compete with bobwhite for the summer's production of seeds. Weathering also depletes the supply.

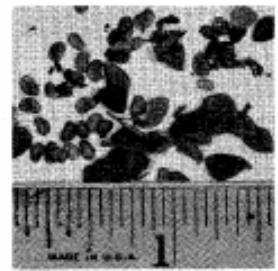
Some staple winter foods of bobwhite quail are listed below. These species have wide distribution throughout Texas. The sportsman and landowner would do well to recognize the plants in the field and to determine which seeds are represented in the food of quail bagged during the hunting season. Seeds of some of these plants will almost always be found to predominate in the winter food of bobwhites in any part of Texas.



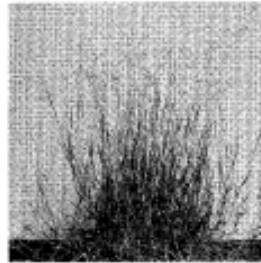
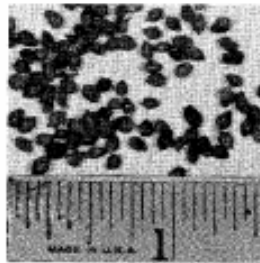
Doveweed—*Croton* sp.



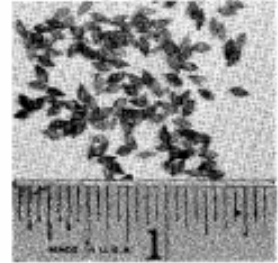
Tick trefoil—*Desmodium* sp.



Ragweed—*Ambrosia* sp.



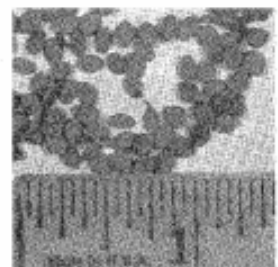
Panic grass—*Panicum* sp.



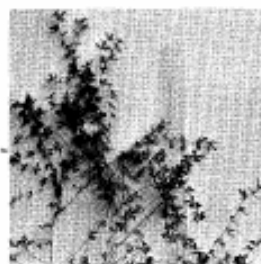
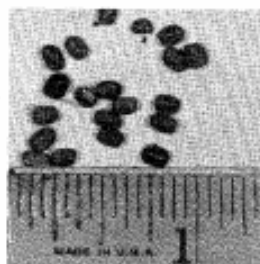
Partridge pea—*Cassia* sp.



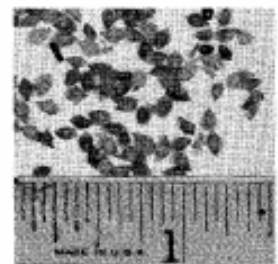
Paspalum—*Paspalum* sp.



Wild bean—*Strophostyles* sp.



Lespedeza—*Lespedeza* sp.



OTHER BOBWHITE FOODS

The list of plants contributing to the quail's winter diet is a long one. The number of plants represented in a series of quail craws is generally greatest at times when food supplies are critically low. When food is abundant, bobwhites, as do people, tend to eat what they like best and have least trouble finding.

A number of woody plants provide winter quail foods in the various regions of Texas. Quail readily eat the smaller acorns, such as those from post oak. To some degree, they are able to crack the larger acorns and break them into bites which can be swallowed. Mesquite beans, pine seeds, gum



elastic berries, wild grapes, French mulberries, hackberry, sumac berries and other products of woody plants occasionally are eaten by bobwhites.

Stockmen should note that grasses contribute little to food needs of bobwhites. This is because few grass seeds are large enough to provide worthwhile food. Paspalums and panic grasses are minor sources of quail food in the state as a whole, but may be important in some localities.

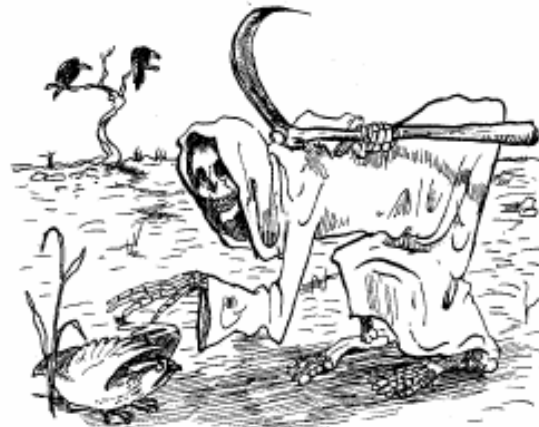
All farm grown grains, including corn, are acceptable to bobwhites. Where grain is left in the field, bobwhites can be expected to utilize it to an extent controlled by the cover pattern of fence rows and pasture edges.

In general, however, it can be safely said that weeds are the most widely distributed source of quail food and weeds respond most reliably to management of quail habitat.

FUNCTIONS OF COVER

The bobwhite cannot live long without cover, just as he cannot live without food. In a sense, the bobwhite's need for cover is a specialized one. However, because the uses and functions of different types of quail cover overlap to some degree, and because external factors such as weather, predation and hunting pressure are variable, bobwhite can adjust somewhat better to cover deficiency than to a shortage of food. So far, no one has been able to draw an exact line where the habitat becomes immediately untenable because of too little or too much cover.

On the other hand, bobwhites may endure a shortage of cover for a time, but the population trend will be downward unless cover deficiency is quickly corrected. The quail manager must aim not only at good cover; he must insure that the cover will not deteriorate under influence of winter storms or livestock use. As pointed out earlier, a month of cover failure can be as disastrous to a covey as can a 12-month lack.



Bobwhites need these types of cover: screening overhead cover for security while feeding and traveling, woody "tangled" cover to which the bobwhite can resort for immediate escape from an

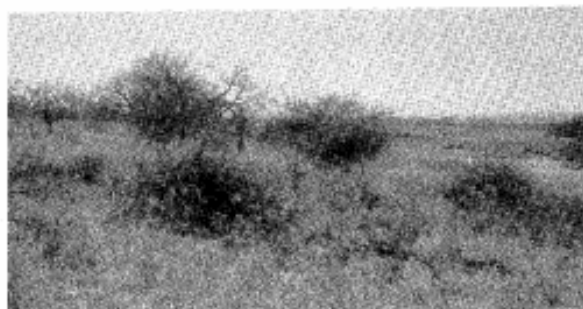
enemy, a "living room" type of cover for dusting or resting, and nesting cover. Roosting cover is also needed; however, if the other types are present it is almost certain that roosting conditions will be no problem. Bobwhites roost on the ground, in grassy or weedy glades, in old reverting fields, on grassy hillsides and in openings in timbered areas. The location of roosts is partly a matter of weather and partly of choosing a site where food will be nearby for the early morning feeding period.

BOBWHITE COVER TAKES MANY FORMS

Types of cover having the above requisites are difficult to describe because each may have the qualities needed, yet vary in composition under influences of soils, climates and land uses. Thus, in the upper Panhandle sandhills, excellent cover may consist of sagebrush and tall grasses (feeding, roosting, nesting) and sumac and wild plum motts (escape, resting, dusting).

At the other side of the state, motts of mesquite, granjeno, guajillo, black brush, white brush or prickly pear may serve the needs for woody cover in grasslands.

On the West Texas Rolling Plains, mesquite brush is the principal woody cover. To serve as stable and safe woody cover, it must be bolstered at ground level by a stand of herbaceous cover. The tree itself is too open but, under conservative range use, it often serves as a living fence to discourage grazing and protect the needed understory of weeds and grasses.



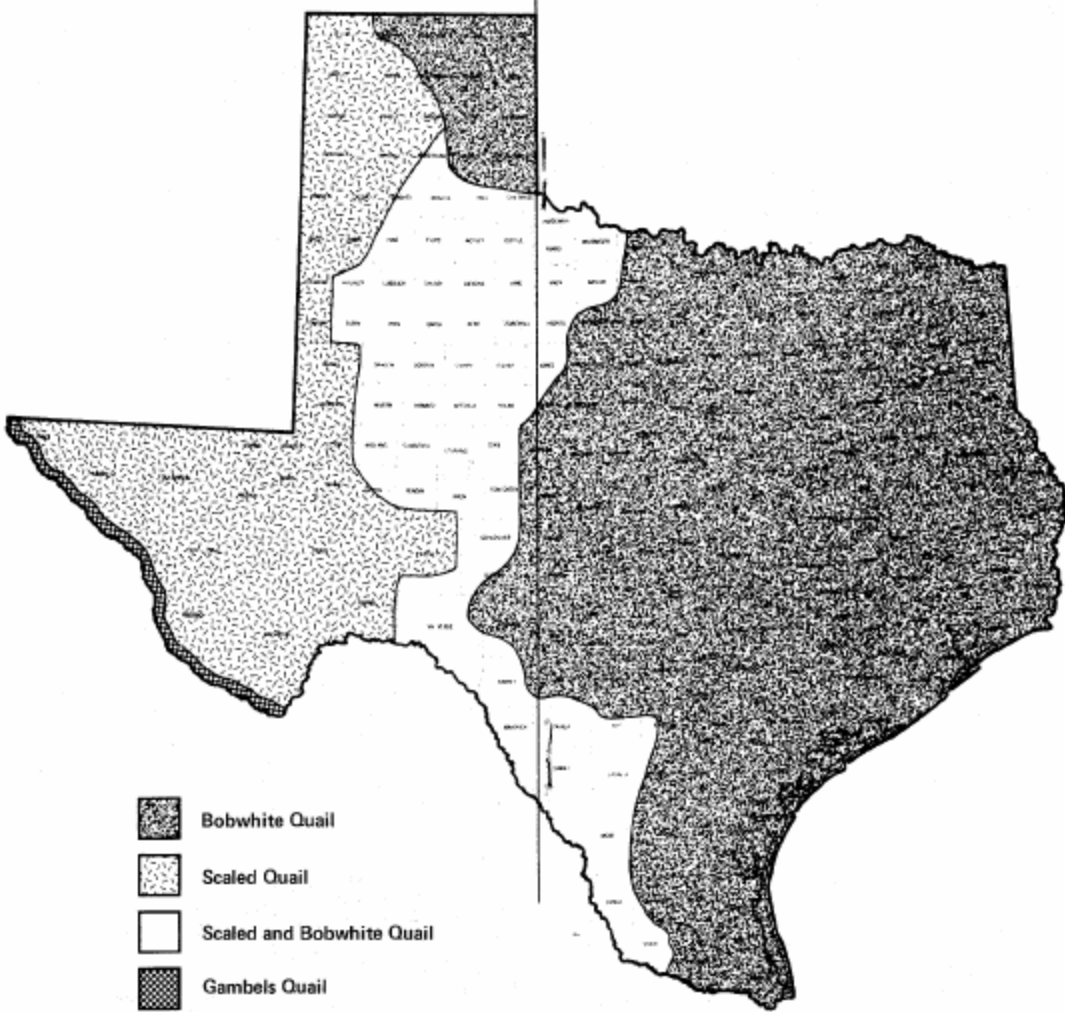
The Grand Prairie of central Texas is threaded with countless creeks whose normally dry tributaries finger out into grasslands and offer examples of almost ideal bobwhite cover; trees, thickets, motts and travel lanes of low bushes and vines form cover patterns of infinite variety.

Eastward, where rainfall is greater, quail cover becomes less of a problem. In forest edges, field fence rows and pasture margins, examples of good quail cover in abundance still can be found. In this part of Texas some of the more important cover plants are yaupon, wild grapes, rattan, wild plums, sumacs, blackberry and greenbrier. In general, the absence of cover is not a problem to the quail manager in east Texas. The problem lies in preservation of cover in a proper spatial relationship to natural foods.

In the Rolling Plains, a continuing program directed at brush eradication, if successful, will adversely effect bobwhite populations. On the other hand, sparing a strip of mesquite or shinoak 50 to 100 feet in width, and at intervals of one fourth mile would accommodate the cover needs of bobwhite, provided that a food supply was adequate and accessible.

Wherever he lives or hunts, the would-be bobwhite manager should learn about cover requirements for bobwhite quail by studying ranges where coveys are located every year.





**AVOID THESE MISTAKES IF YOU WANT
HABITAT MANAGEMENT TO BE
SUCCESSFUL**

Bobwhite requires acreage out of all proportion to his small size. The maximum population attainable is believed to be one bobwhite per acre for any large block of range such as a farm or ranch.

Because the average covey consists of from 10 to 15 bobwhites, a block of 15 acres will seldom support more than one covey. This occurs only under ideal conditions, and seldom lasts more than a year. Thus, the acreage requirements of a bobwhite covey are equal to, or greater than, the acres required per cow over most of the native grazing ranges in Texas.



Do not expect a plum thicket or grapevine to hold a covey of bobwhites if it is all the habitat in sight.

It takes time to develop bobwhite habitat. Sources of natural food cannot be developed in less than one growing season. Cover, if improvement necessitates plantings, will be difficult to develop within less than four or five years. The improvement of existing cover takes less time and, if good cover is present, it may only need matching with a food supply. This again requires as much time as it takes to grow a food supply,

or one growing season. Quail management is not a spur-of-the-moment project to be undertaken today and abandoned tomorrow.



Expect no success with bobwhites until their habitat is completed and "working".

Success of food and cover plantings depends upon the amount of preparation of the seed bed and care given young plantings. Nursery stock of woody transplants are sure to fail if planted on raw soil and left to compete with natural growth of weeds and grasses. For all food plantings, a well tilled seed bed is essential. Rows of tree or shrub transplants need a side dressing with a disc harrow or cultivator several times each season during the first three or four years.



It takes work to develop habitat from plantings.

BY-PRODUCT MANAGEMENT OF HABITAT

(Resulting From Good Land Management Practices Used Primarily for Other Purposes)

This is the most practical and economical type of quail habitat management because it serves two purposes at once.

FOOD



1. Almost any soil disturbance results in growth of the weeds which produce quail food. This principle can be utilized anywhere by controlled burning, plowing, discing, fallowing or grazing. All these practices should be carried out after the end of winter but before spring growth gets underway.



2. Conservative grazing pressure results in sustained production of food-producing plants and, at the same time, insures preservation of needed ground cover.



3. Discing, contouring or pitting rangelands brings on weed successions productive of quail food.

COVER



1. Protection of gullies to retard run-off helps develop good ground cover.
 - a. Where any pasturing of a field is done, gullies should be fenced out.



- b. Erosion often can be retarded or stopped with "thickety" plantings of woody cover in selected places.



2. Planting windbreaks or adding to existing windbreaks provides good escape cover.

- a. These should be fenced to preserve ground cover.
- b. Suitable shrub and tree species: Russian olive, black locust, eastern red cedar, desert willow, sumac and other drought resistant species are best for drier areas of Texas.
- c. Shrubbery species can be fitted into existing windbreaks and hedges which are too open.
- d. Tree and shrub plantings require tillage for at least three years. Thereafter, weeds and grasses improve this woody growth as bobwhite habitat.
- e. After woody plantings are established, weedy growth can be promoted by a single discing of the middles during March or April.



3. Planting oats or other temporary cover crops adjacent to woody cover adds to the value of cover and provides needed green food in winter.



4. Stubble left in the close vicinity of windbreaks or other woody cover adds to value of bobwhite habitat (this is especially effective in winter if there is combine waste or shocked grain left in the field).



5. Deferred or rotated grazing results in carry-over of dead grasses essential for nesting cover.



6. Use of spreader dams on livestock ranges retards run-off; it also results in good ground cover.

HABITAT MANAGEMENT PRIMARILY FOR IMPROVING CARRYING CAPACITY OF LAND

FOOD DEVELOPMENT

Any practice which sets back plant succession, including use of grazing animals within conservative limits, is beneficial to bobwhite quail if adequate cover is present.



1. It is wise to develop native food by plowing, discing or burning. March and early April are the best times.
 - a. Associate foods with existing woody cover, preferably in odd corners, brushy fence rows and hedges, alluvial spots along creek courses and edges of timbered plots.
 - b. If none of the weeds listed on pages 3 and 4 emerge, it will be necessary to plant or sow locally adapted species which will provide known quail foods. These might include sorghum, alnum millet, soy beans or annual lespedeza.



2. Leaving several rows of standing field grains adjacent to windbreak plantings or brushy fence rows is an effective practice under favorable conditions. This method has the disadvantage of such food supplies attracting blackbirds and rodents which quickly consume the grain. In providing such plantings for quail food, it is well to remember that it takes a strip approximately eight feet wide and a mile long to equal an acre. Be guided accordingly and leave enough for all feathered pensioners.

COVER DEVELOPMENT

In situations where native cover is inadequate or has been destroyed, several improvements are possible.

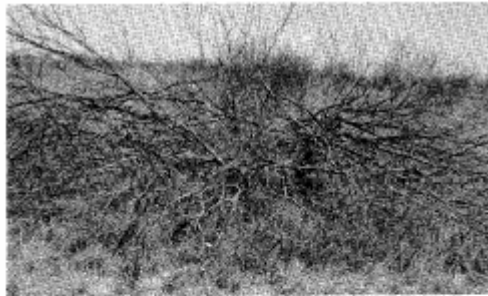


1. Plant native or exotic shrubs proven in the locality and protect them from livestock.
 - a. For bobwhite utilization as escape or resting cover, use edge plantings along food supply or tie together scattered natural covers with hedge plantings.
 - b. Plan cover plantings to front the maximum feeding area.
 - c. Some desirable species, depending on location, are eastern red cedar, desert willow, Russian mulberry, Russian olive, squawbush, yaupon, rattan, grape, greenbrier, granjeno and prickly pear.

- d. Try for irregular or natural appearing patterns of coverts.



2. Where trees support grapevines but are too open at ground level to serve as quail cover, cut half through the tree a few feet above the ground and push it over, thus bringing living vines closer to earth.



3. Mesquite brush ranges can be improved in respect to cover by half-cutting multiple trunks near ground level, allowing tips of limbs to touch the ground and serve as protection for ground cover. This method will be useless without the type of range management resulting in production of quail foods.

Before making any selection of food and cover plants, it might be profitable to ask the Texas Game and Fish Commission for advice and guidance about habitat problems.

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