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# TIMBER

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# GRAZING

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# GAME



By LOUIS T. NIELAND  
 AGRICULTURAL EXTENSION SERVICE  
 GAINESVILLE, FLORIDA

# COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS

(Acts of May 8 and June 30, 1914)

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# **TIMBER-GRAZING-GAME**

## **A SUGGESTED COMBINED PROGRAM FOR UNCULTIVATED LANDS**

By L. T. NIELAND, Extension Forester

Timber and game were fundamental natural resources of Florida long before the white man ever set foot on its shores. Grazing has been important ever since cattle were introduced to the State by the Spaniards 4 centuries ago. Today both timber and grazing are of greater importance than ever before.

Because the old practice of burning off the dead wiregrass cover to improve early spring grazing often plays havoc with pine timber stands, a new approach which might provide for both cattle and trees appears to be needed.

Believing that a way could be found to combine timber and grazing and form a better basis for utilization of the land, provide effective fire barriers in wide strips and result in benefits to the timber owner, the cattleman and the State, the author in 1940 proposed a combined timber-grazing-game program. This program has attracted widespread attention. It has appealed to owners of both timber and cattle.

Of Florida's 35 million acres of land, about 2½ million acres, or 7 percent, are in cultivation. It is estimated that an additional 1½ million acres are in urban property, highways, railroads, airports and similar uses. That leaves approximately 31 million acres, or nearly 89 percent of the State's area, which is or may be made available for such extensive uses as timber growing, grazing and wildlife development.

### **POSSIBILITIES OF TIMBER-GRAZING-GAME PROGRAM**

The State's future and expansion depend, to a large extent, upon the constructive use of these 31 million acres of untilled land. When this vast acreage begins to produce in maximum amount, under the ownership and management of those who live on the land, all of the timber, grass and game each acre is capable of producing, a new wealth and wellbeing in magnitude as yet undreamed will come to Florida.

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**ACKNOWLEDGMENTS.**—The author expresses appreciation to the U. S. Fish and Wildlife Service for the pictures used at bottom of the front cover, in Fig. 4 and on the back cover; and the USDA Extension Service for making the drawings.

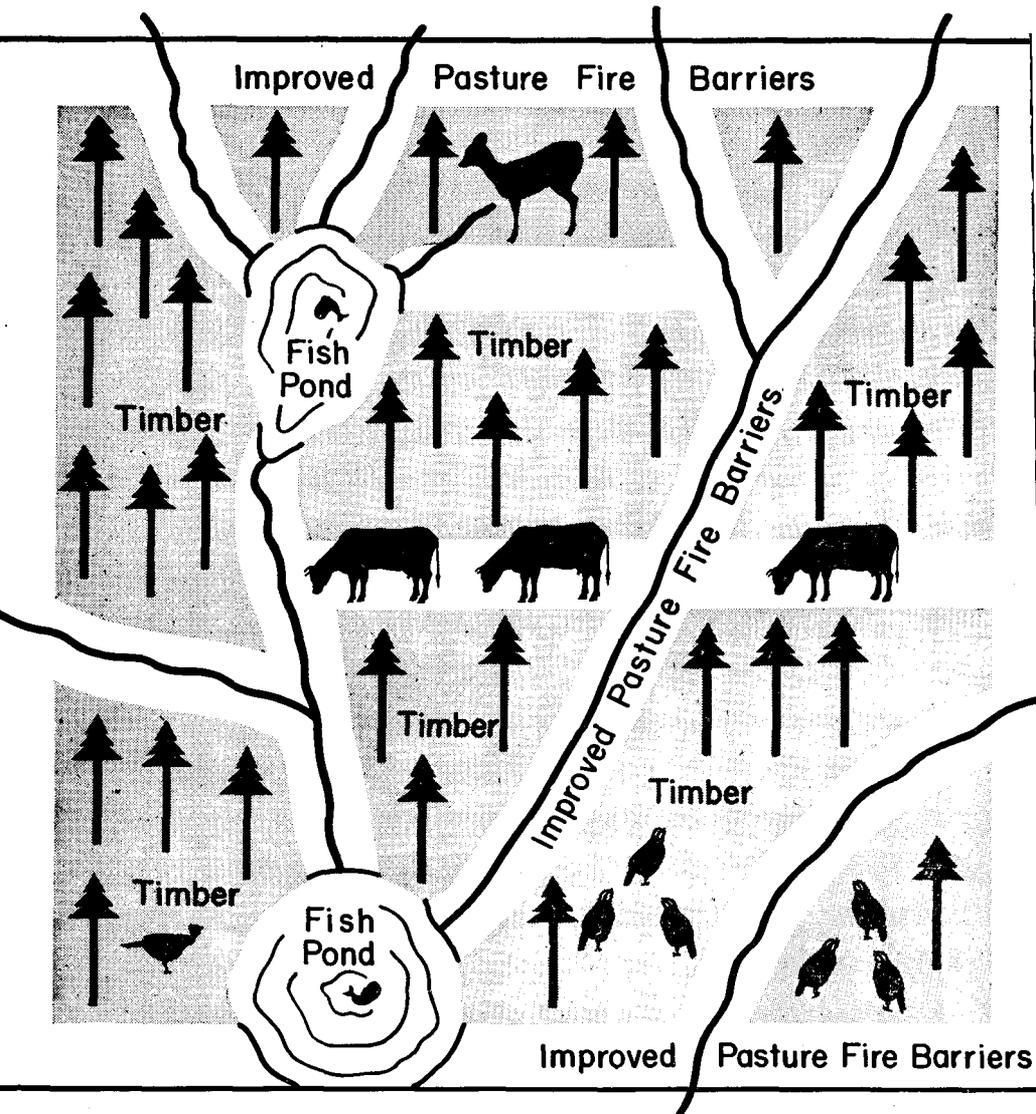


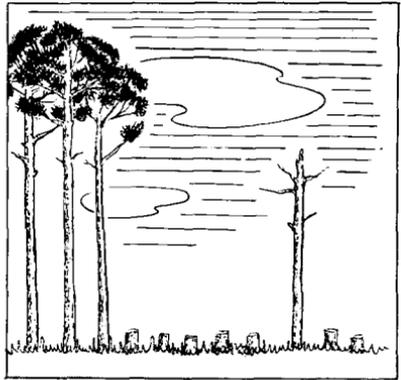
Fig. 1.—The timber-grazing-game program is a “natural” for Florida cutover lands. This sketch shows how a section of 640 acres of forest land is protected from fire by wide strips of improved pasture grass which are grazed closely by cattle. The ponds provide a place for fish and assure a water supply for the cattle.

## DIMINISHING RESOURCES IN CUTOVER LAND AREAS

Few states in the Union have been more richly endowed by Nature than Florida. Forests of high value that seemed inexhaustible once extended from coast to coast. Game birds and animals and the finest of food and game fish were everywhere in plentiful supply. These have been a principal Florida asset—for both residents and tourists.

Gradually, however, this great heritage has slipped away. Today in many areas little remains of the magnificent stands of cypress, longleaf and slash pine, red cedar and the many kinds of valuable hardwoods. Deer

and wild turkeys exist in but a few protected spots. The alligator, bear, fox-squirrel, otter, Florida sandhill crane, wood duck and many other species of bird and animal life seem to be on the way out. The ivory-billed woodpecker and parakeet have already disappeared. Fishing has been all but destroyed in many of our ponds and lakes.



Carelessness and unnecessary wastefulness, it may be admitted, contributed in part to the destruction of such great natural resources as forests and wildlife. In the conquest of a new domain this seems inevitable. On the other hand, the chief reason for widespread depletion may well have been the absence of a plan, or a program, designed to develop and maintain the basic resources and yet, at the same time, practical enough to meet the everyday needs of the people.

At any rate the past has seen much reaping and little sowing, and Nature's cupboard, in many instances, has become very bare. A fundamental law was disregarded. Withdrawals exceeded deposits. A better concept is needed. The renewable natural resources, such as soil fertility, forests, game and fish must be developed to their highest point of productivity. After that **the portion harvested or withdrawn each year must never exceed the annual increase or replacement.** The future development and prosperity of Florida would clearly seem to depend upon how closely and faithfully this simple rule is followed.

## PROBLEMS OF FOREST AND RANGE LANDS

Forest and grazing lands in Florida are, in the main, inseparable. There are, of course, certain areas, such as in the extensive marsh and prairie regions, where timber growing probably will be limited to isolated spots. Grassy glades where the soil is periodically too wet for trees also intersperse the piney woods at frequent intervals. The soil in these glades is moist and productive and lends itself well to the establishment of improved pasture grasses. On the other hand, almost all of the land now in timber is well adapted to profitable forest production and most of it will likely remain in trees. With few exceptions the forested lands, as well as other areas, are and always have been used for grazing the year around.



Principal problems in forested areas are (1) depleted timber stands, (2) difficulty in protecting forests from fire, (3) lack of a program for proper maintenance of game, fish and other wildlife, (4) loss of soil moisture through destruction of humus and other decaying plant residue due to periodic fires which lower the water-holding capacity of the soil and ac-

celerate run-off, (5) absence of a sound harvesting program which would adjust the annual cut to the annual growth, and (6) the necessity for burning over, annually, large areas of forest land to provide grazing for existing herds of cattle.

In areas suitable chiefly for grazing, problems include (1) lack of small, compact stands of timber where these may contribute to shelter for livestock, provide fence posts and additional income, (2) lack of a sufficient number of water holes to furnish fresh, wholesome water for stock during extended periods of drouth, (3) insufficient improved pasture areas to supplement the native wiregrass and other wild forage plants, and (4) lack of a program for maintenance of game, fish and other wildlife.

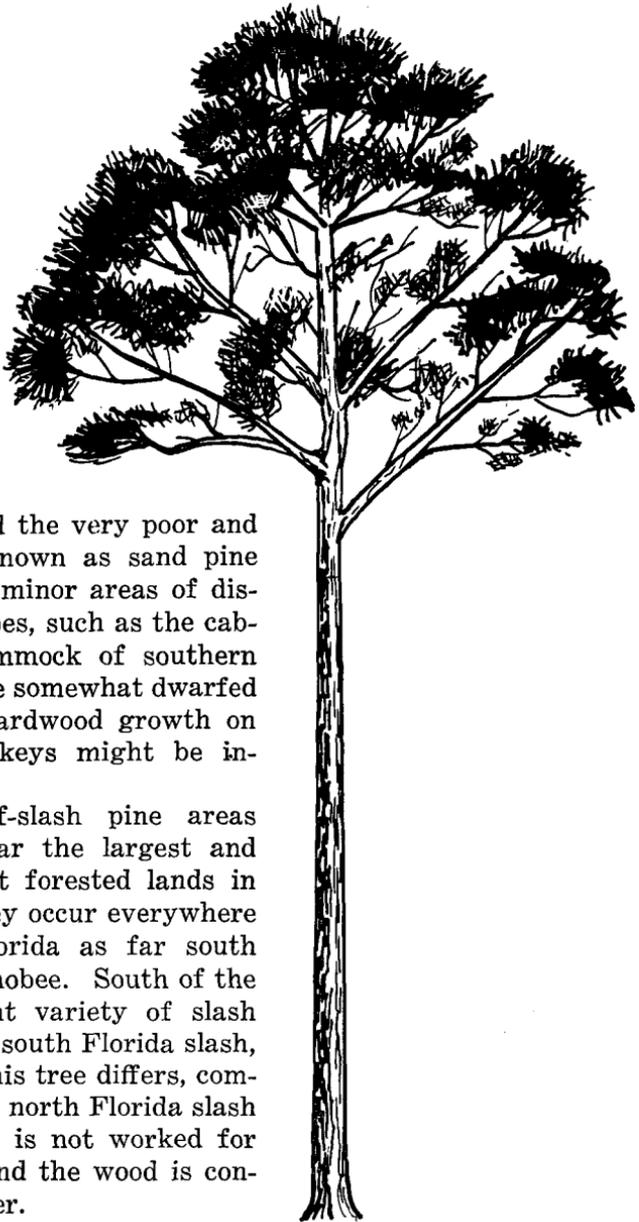
## FOREST TYPES OF FLORIDA

The extremely variable soil and moisture conditions peculiar to Florida favor a wide diversity of forest tree species. Often an area no larger than 40 acres supports several entirely different forest types. Although some forest stands consist of

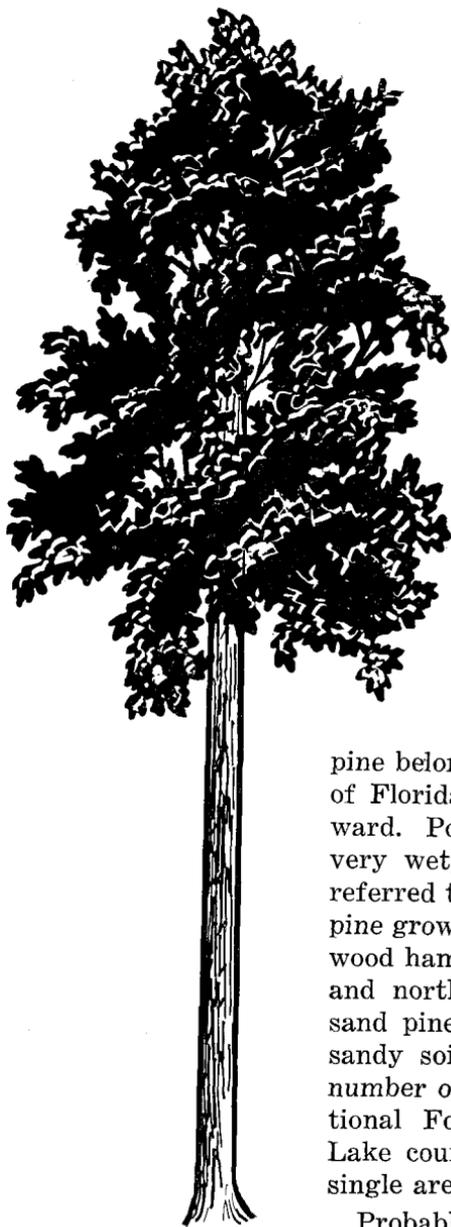
mixed species, particularly in the hammocks, the State's main forest types may be roughly divided into 5 different groups: Longleaf-slash pine lands, hardwood hammocks, black gum and cypress swamps, longleaf-scrub oak ridges, and the very poor and thirsty soils known as sand pine scrub. A few minor areas of distinct forest types, such as the cabbage palm hammock of southern Florida, and the somewhat dwarfed and scrubby hardwood growth on many of the keys might be included.

The longleaf-slash pine areas comprise by far the largest and most important forested lands in the State. They occur everywhere throughout Florida as far south as Lake Okeechobee. South of the lake a different variety of slash pine, known as south Florida slash, takes over. This tree differs, commercially, from north Florida slash pine in that it is not worked for naval stores, and the wood is considerably harder.

While longleaf and slash pines often grow in mixed stands, slash will tolerate much wetter lands than longleaf. On



## Pines



## Hardwoods

the other hand, longleaf grows successfully on sandy ridges, which are too dry for slash. On many flatwoods and other soils, however both trees seem about equally well adapted. Longleaf and slash are called the dual-purpose pines, because they yield the best lumber as well as being the only species which can be worked for naval stores.

The other 5 native pines are of less importance and not nearly so numerous as longleaf and slash. Loblolly pine grows over the northern portion of the longleaf-slash range, and is frequently found crowding in among these more valuable trees. Shortleaf pine belongs to the red clay hills region of Florida from Madison County westward. Pond pine is restricted to certain very wet, acid, seepy spots commonly referred to as "sandsoak" soils. Spruce pine grows somewhat sparingly in hardwood hammocks throughout the central and northern parts of the State, and sand pine only on the deep, dry, poor sandy soils along the coasts and in a number of other areas. The Ocala National Forest located in Marion and Lake counties has perhaps the largest single area of sand pine in the State.

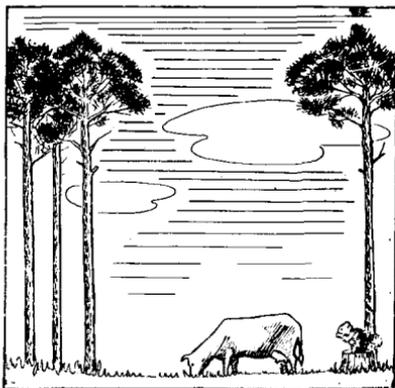
Probably second in importance to the longleaf-slash pine type are the hardwood hammocks. These contain most of the valuable hardwoods such as sweet gum, black gum,

magnolia, white bay; black cherry, hammock hickory, ash, white oak, red oak, basswood, maple and dogwood. In some hardwood hammocks, particularly those underlain with limestone, marl or shell deposits, red cedar is well adapted and is always a welcome and valuable addition to the stand. There is, of course, a large number of other trees in every hardwood hammock which are of little or no commercial value. Among the most common of these are laurel oak, live oak, water oak, hackberry, elm, holly, beech, laurel cherry and persimmon.

Cypress and black gum swamps occur almost everywhere in Florida. They vary in size from a half acre to hundreds of acres. Many thousands of these are small, circular in shape, and contain less than 10 acres. Some are made up of pure stands of black gum, some are pure cypress, and others may be mixed stands of gum and cypress. On deep, rich soils tree growth in swamps is rapid and much valuable wood may be produced, but in pure cypress swamps, where all merchantable timber has been cut, many years must pass before another harvest can be made.

Most of the longleaf pine-scrub oak ridge lands have been almost clear cut, and periodic fires and lack of seed trees have prevented natural restocking of the pines. Such areas are usually too dry for slash pines, and no satisfactory way has yet been found to plant longleaf pines in such locations successfully. Where seed trees are present and the land is protected from fire some regeneration of longleaf pine may be expected, but on this type natural reforestation is exceedingly slow.

The sand pine scrub areas are usually of low productivity from a timber growing standpoint. This pine is of medium to small size, is easily killed by fire, and the wood is rather knotty and not durable in the weather. Lumber for interior trim and pulpwood are its chief uses. Because of its habit of growing in compact stands, with a thick undercover of brush, sand pine scrub provides good game cover. The land on which sand pine grows is too dry and poor for cultivation or for production of more valuable tree species.



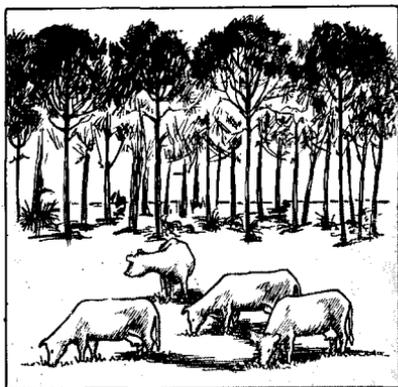
## A SUGGESTED PROGRAM FOR UNTILLED LANDS

To aid in the sound and constructive development of the State's tremendous acreage of forest and range lands, a 3-point program is suggested. Under this program, timber growing, grazing and game production (including fish) would be combined. The suitability of the land for each endeavor, and the inclination of the owner, would determine which is to become the major enterprise.

The program should be equally adaptable whether on farm woodlands, on extensive forest land holdings, or on grazing ranges. In brief, fully stocked stands of timber will be grown on all lands not suited to or needed for pastures. On cattle ranches or grazing ranges, timber would be restricted largely to areas not adapted to grass. A few additional small, compact timber stands may be developed, consisting of an acre or 2, principally as shelter areas for livestock. Game and other wildlife can, with very little effort, be made an attractive and profitable sideline to either timber growing or grazing.

## HOW THE PROGRAM APPLIES IN FOREST AREAS

The protection of forest lands from fire is today the most serious problem which confronts the timber grower. Unless this problem can be solved, or at least greatly alleviated, timber production will remain under a severe handicap and losses from fire will be unreasonably high. A few years of successful protection, almost anywhere in Florida, builds up a heavy growth of dry wiregrass, pine needles and other highly flammable material. This accumulation of dry vegetation, known locally as a "rough", constitutes a perpetual fire hazard. Even



when care is exercised in fire prevention there is much danger of accidental fires during the dry season in winter and spring.

Therefore, steps must be taken to meet the extreme fire hazard which always comes with complete fire protection. Under

the proposed program this would be accomplished by establishing wide improved pasture fire barriers around and through the forest area.

In small blocks of farm timber such barriers may not need to be more than 50 or 60 feet wide. But on the larger forest holdings of 500 acres and over, especially if the risk is great, fire barriers from 100 to 200 feet wide are usually necessary. When sodded to such perennial pasture grasses as carpet, Bahia and some of the other better grasses, which cattle graze closely, an effective barrier against fire can be maintained. Insofar as possible the open spots in the forest, wherever soil types are most suitable for the improved pasture grasses, should be chosen for these protective fire barrier strips. Often forested areas are interspersed with low, moist, grassy swales where trees do not grow. Usually these can



Fig. 2.—A 13-year-old stand of planted slash pines ready for the first harvest, which will be pulpwood. The author carries the axe.

be converted easily to improved pasture grasses by shallow disking to destroy the native cover of wiregrass and then sowing to the better pasture grasses. Quite often simply chopping, seeding and mowing will establish improved pasture. Frequently the wide, shallow, grassy depressions meander for miles through the woods. By connecting these grassy lands at strategic intervals with pasture strips established through wooded lands, a system of wide fire barriers results which will provide protection for the blocks of timber they surround. In flatwoods areas of longleaf-slash pine forest type, where the wiregrass cover is heaviest and the fire hazard greatest, as much as 20 percent of a forest area may need to be in improved pasture grass for adequate protection of the timbered lands.

On a section of land containing 640 acres, then, there would

be 120 to 130 acres of improved pasture and 510 to 520 acres in timber. This might, at first glance, appear to take too much land out of forest production. But when we consider that much of the pasture grass will be on land not suitable for trees, and that the timber loss through fire on forest land **not** so protected will likely be much greater than the sacrifice of some trees to pasture, the soundness of such a program would seem to be apparent.

There are other important considerations in favor of the improved pasture method of fire protection. Almost all Florida pine timber lands are understocked. Many areas now carry less than a 20 percent stand. The forest landowner is concerned about this because, even with successful fire protection, it will be many years before any considerable income can be expected from forest products. Taxes, improvements, supervision and interest on the investment are yearly items which must be paid while a new forest comes in and grows into merchantable timber. To meet these necessary costs while timber is coming back, an income from grazing might play a vital part.

Returning, for a moment, to a section (640 acres) of forest land which has been safeguarded from fire by the establishment of 100-foot wide pasture fire barriers around and through the tract, there may now be a total of 128 acres in improved pasture grasses. These 128 acres may produce 100 pounds of beef per acre per year, or 12,800 pounds of beef on each section of land so protected from fire. In addition to the beef produced on the improved pasture strips, some grazing will be picked up on the forested lands. This should about double the amount of beef a section of land of 640 acres would produce when all of the land is burned annually or biennially, as in the old system of range management under which, of course, little in the way of forest income could be developed. Figuring beef on the hoof at 6 cents per pound, probably a conservative average price over a long period of years, we would have a gross income from grazing alone, while the timber is growing, of 12,800 pounds of beef at 6 cents per pound, or \$768.00 for each section of land. This should pay all costs of maintaining both the timber and grazing operations, and leave a profit besides. Thus, we may have a forest fire protective system which yields an annual profit instead of resulting in an annual expense.

Another point worthy of mention is that in Florida we have a great beef cattle industry. Vast herds have been developed

and are being sustained, largely upon native wiregrass, in cut-over pine land country. To maintain these herds cattle owners are obliged to burn off the dry wiregrass in late winter to provide early spring grazing for their stock. This is fine for the grazing of cattle, but death to millions of pine seedlings—our forests of tomorrow—while they are still in the grass stage. We must retain our important beef cattle industry but, at the same time, the State's interests demand that the forest resources be restored.

Fortunately, under the combined timber-grazing-game program, all 3 enterprises may be maintained. In fact, they might be expanded and developed to the best interests of all. While burning the woods is disastrous to the future of our forests,

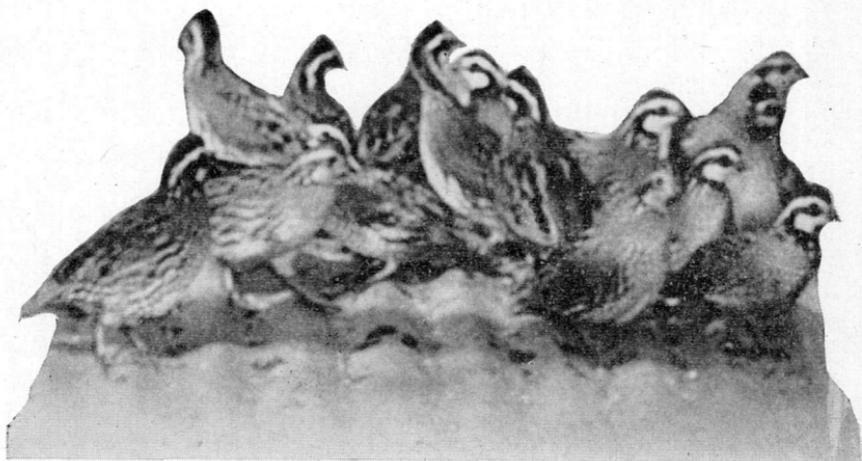


Fig. 3.—Bob white quail—a natural game bird of the piney woods.

a hard blow, on the other hand, would be dealt the cattle interests if the burning off of all forest lands were suddenly prohibited. Such a drastic procedure would be unwise and unnecessary. The combined program would be gradually instituted over a period of years, and the improved pasture strips should more than compensate for any loss of grazing due to exclusion of fire to favor the timber stands.

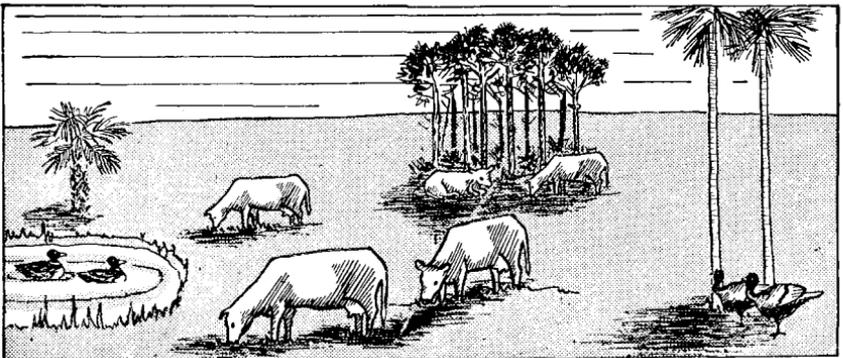
Of course, if it should be decided that certain wiregrass lands must be periodically burned to supplement the improved pasture areas in early spring, these could be set aside as additional grazing lands. Such burned areas should, insofar as possible, be located in areas where timber is sparse because the use of fire in timberlands, even when carried out under the most

favorable conditions, will result in greatly reduced income from timber. When the timber-grazing-game program is in full operation it is probable that more and better cattle can be maintained on a given forest range than previously, while at the same time all of the timber it is possible to protect will be growing in the wooded areas.

### IMPROVED PASTURES AND TREES BELONG ON SEPARATE AREAS

The question is sometimes asked, "Why not establish the better pasture grasses under the trees, and let the cattle graze them closely enough to remove the fire hazard?"

Establishment of improved pasture grasses and forest trees on one and the same acre of land is not recommended by foresters or agronomists for several reasons. All of the improved pasture grasses of Florida need plenty of sunlight, and all forest trees, to grow tall and develop long, clean, knot-free and high-value logs, must be crowded while they are in the sapling stage, and even beyond. They must grow in such dense stands during the first 15 or 20 years that practically all grass will die out under the heavy shade and leaf litter. If young trees are spaced far enough apart for much grass to grow the trees will be too limby and broad-topped. They will become shade trees instead of lumber trees and be of little value. Then again, improved pasture grasses should be mown, or at least some kind of rotary chopper should be run over them about once or twice each year to keep down weeds and briars. This would be very difficult if too many trees are in the way. Finally, the



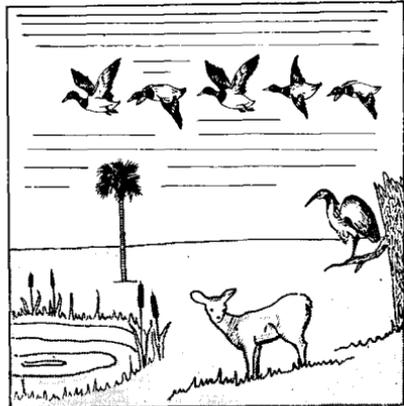
improved pasture grasses are close feeders. Their dense root systems go down several feet deep, and in a dry season forest trees often cannot compete successfully for the limited amount of soil moisture available. Many trees might suffer or even die during a drouth because the compact permanent pasture sods rob them of necessary moisture.

It is, of course, well known that in every forest area there will always be some native forage and browse plants. Timber does not naturally come in so thickly everywhere, nor all at once, as to crowd out all grass. As the dense forest stands grow older and some of the trees are removed for sale, enough sunlight will filter through to bring back a certain amount of grass. In some forest stands, such as hardwood hammocks, there will be very little grass but in the pine lands openings in the forest which will furnish considerable grazing will always be present. Reforested areas, therefore, will merely reduce, not eliminate, the native forage plants.

### GAME AND WILD LIFE IMPORTANT

Although game and wildlife development may be regarded as a sideline to timber growing or grazing, it is nevertheless a very important feature of the 3-point program.

Florida probably will always attract large numbers of people in search of recreation. Many of these come, and return each year, to places where hunting and fishing are good. These visitors bring and spend millions of dollars. No area is too remote for them to find in quest of their favorite sport, provided camping facilities are adequate. When deer, wild turkey, quail, ducks, doves and other game are again plentiful, and when bass and perch fishing in our lakes and ponds everywhere is good, there should be room for hundreds of additional hunting and fishing camps. Camps in such areas would very likely be in demand. By leasing these camps, and making a charge for the amount of game taken, forest landowners could make their holdings yield a handsome income from this source



each year. This might help materially in meeting annual taxes and overhead on the whole operation.

Game and wildlife would seem to be natural by-products of well-managed forest lands, and their production should entail little expense. Possibly some little planting of game food patches in certain places would be of help. Quail and wild turkeys are known to feed on the lespedeza and carpet grass seeds which usually form a large part of the fire barrier pasture strips. The main thing, however, would be to restock the game where necessary, protect it, and when sufficiently numerous, properly adjust the annual take to the annual increase.

### **TIMBER, GAME AND CATTLE RANCHES**

On cattle ranches and ranges where grazing is the principal interest, the land usually will be managed so as to carry the largest possible number of cattle the year round. Timber production is of minor importance and, in most cases, will be carried on only to the extent that it does not interfere with the main business of cattle raising. However, there are sometimes limited areas of good pine timber located on poor grazing land, or there may be some swamps or some hammocks capable of producing valuable timber. Also, a few dense sapling thickets might be established where these can provide necessary shade and protection to livestock from the weather.

By following a few simple forest practices these timber patches, which are of little value for grazing, might be made

Fig. 4.—The wild turkey should be Florida's leading game bird. Good forestry and a little protection will bring this noble game bird back everywhere in Florida.



to yield the posts, poles or lumber which are always needed in cattle operations.

The opportunities, on the other hand, for increasing and maintaining certain game birds and animals on Florida ranges appear to be very good. Where suitable food and cover are available the number of deer, turkey, quail and other small game might be greatly increased at little or no cost and with profit to the ranch owner.

There may also be good possibilities for establishment of fishing holes on many range lands. In much of the cattle country the land is very flat and ponds are shallow. During the dry season, and particularly when there are extended drouths, many ponds may go dry, leaving thousands of food and game fish to die. To add to the problem, livestock are sometimes left without adequate supplies of fresh water. In some cases, cattle have been poisoned because they were forced to drink water polluted by dead fish.

To overcome this difficulty it may be possible to use a small dragline dredge to deepen these ponds so that they will hold 4 or 5 feet of water, even during the most severe drouths. The water will then remain fresh and wholesome, cattle will have a dependable place to drink, the fish will be saved, and the ranch will be ahead by one good fishing spot.

### OTHER FOREST VALUES

When timberlands are safeguarded from fire and the native plant and animal life develops as Nature intended, many little incidental values are recreated. It is well known that unburned woods make the best bee pastures. Annual or periodic fires destroy the bloom of a number of the more important honey plants. Even though the nectar-bearing shrubs and perennials may sprout from the rootstocks after a fire, the flowers are frequently borne only on twigs that are 2 or more years old. Therefore annual, or even biennial, fires will prevent flower-bearing wood from forming. The production of honey, for both home use and market, could be greatly expanded through the prevention of woods fires.



Another by-product of unburned woods which is of considerable importance to country people is the annual crop of wild blueberries, huckleberries and briarberries. Fires often wipe out the entire harvest of these and other native fruits so much esteemed by both town and rural people for pies and preserves.

A third item which might well be mentioned as part of a well-managed forest economy is the trapping of fur-bearers. Otter, raccoon, skunk, fox and opossum could probably be maintained in sufficient numbers, especially in the more remote areas, to provide some income each year from the sale of furs. The annual take, however, must be adjusted to the annual increase to prevent extermination. Otter, because of their very valuable furs, have been too heavily trapped and are in danger of becoming extinct.

While singly each of these incidental values may not seem of great importance, yet in the aggregate they may contribute in considerable amount towards a more abundant rural life. Even the scenic effect of a splendidly forested area may become a real community asset in a State which seeks to attract tourists.

### SUMMARY

Florida's uncultivated acreage is close to 31,000,000 acres, or approximately 89 percent of the State's total land area.

Most of this huge area is today only partially productive and is contributing but a fractional part of the forest and other wealth it is capable of producing.

Future development and expansion in Florida of agriculture, industry and commerce is in large measure dependent upon the full and constructive use of the untilled land area.

Statewide adoption of a practical, sound and workable program, which includes the conservation, restoration and proper utilization of all natural resources, appears to be needed.

Such a program must provide for development of forests, grazing, game and wildlife. It must be devised and planned so that owners of large and small tracts of forest and range lands can continue to own and operate their holdings at a profit while these lands are being advanced to their highest state of productivity.

Since timber is today, and will probably continue to be, the most important resource on the greater part of the State's untilled land area, the production of forest crops must remain a major enterprise. In some areas, however, the grazing of cattle

will, in all probability, continue as the principal land use. In a few instances both timber growing and grazing may possibly be carried on intensively on something like a 50-50 basis.

Forest fires still constitute the principal obstacle to profitable forest production in Florida. Until this problem can be overcome, timber losses due to fire will be discouragingly severe. The protection of a tract of timber from fire for a few years merely builds up a heavy, dry vegetative cover which increases the fire hazard.

To provide adequate protection from fire it is suggested that improved pasture grass strips, from 100 to 200 feet wide, be established around and through the more extensive areas of forest land. Because these better pasture grass sods are closely grazed by cattle they would provide effective barriers to fire.

In areas where the fire risk is high and the timbered acreage amounts to 500 acres or more it may be necessary to convert as much as 20 percent of the forested land to improved pasture, using the strip method.

Advantages of this method are (1) effective protection against fire, (2) a fire protective procedure which will yield an annual profit through cattle, instead of entailing an annual expense, (3) a larger money return from the land, (4) an earlier return from the land, which helps to meet carrying charges while depleted timber stands are being restored, (5) the retention and expansion of the important cattle industry, even on land used primarily for timber growing, (6) the conservation of the State's soil and water resources, (7) a program that is constructive, feasible, profitable and practical, and can be instituted gradually according to the means and inclinations of the landowner, (8) the program is applicable to both farm woodlands and extensive forest holdings.

The production of game, fish and other forms of wildlife may be an attractive and profitable feature of well-managed timber and grazing operations.

Such a program offers a positive approach towards the solution of one of the State's most pressing conservation problems, assures proper consideration of the best interests of cattlemen and timber growers, and provides the basis for a mutually acceptable and constructive program through which all interests may prosper.

