ALABAMA'S TENNESSEE RIVER WATERFOWL PROJECT 23-D: ITS ADMINISTRATION AND DEVELOPMENT

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The Tennessee River enters the northeast corner of Alabama from the state of Tennessee near Chattanooga and winds its way through the fertile farm land known as the Tennessee Valley. It re-enters Tennessee at the Mississippi-Alabama state line. The Pickwick Dam, though located in the state of Tennessee, has some forty miles of its reservoir in the state of Alabama, just west of the Wilson Dam. Two large dams have been constructed by the Tennessee Valley Authority and one by the United States Army Engineers across the Tennessee River in Alabama. The first of these dams to be built was the Wilson Dam near the Tri-Cities (Florence, Sheffield, and Tuscumbia) which was completed in 1924, by the United States Army Engineers creating an artificial lake containing 16,300 acres of water surface at the 506' contour. The Wheeler Dam was completed by the Tennessee Valley Authority in 1936, and is 15.5 miles upstream from the Wilson Dam. This reservoir area contains 67,100 acres of water surface at the 556' countour and is 74 miles long. The Guntersville Dam was completed in 1939, and is located 10.5 miles down river from Guntersville, Alabama, and has a total reservoir area of 66,600 acres of water surface at the 595' contour.

This project which is on the Tennessee River consists of three waterfowl management areas and one refuge. The names, location, and size of these projects are as follows: The Seven Mile Island Waterfowl Management Area is located on the Pickwick Reservoir on the north side of the Tennessee River, and its eastern boundary almost touches the city limits of Florence, Alabama. This project contains 4,701 acres of land and water within its boundary. The Swan Creek Waterfowl Management Area is located on the Wheeler Reservoir one mile north of Decatur, Alabama, and joins the Wheeler National Refuge at its eastern boundary. This project has a gross acreage within its boundaries of 7,242 acres of land and water. The Mud Creek Waterfowl Management Area is located on the Gunterville Reservoir, nine miles from Scottsboro, Alabama. The Tennessee state line is approximately 23 miles northeast and the Georgia line is approximately 30 miles east of the project. This project contains a total of 8,393 acres of land and water within its boundaries. The North Sauty Waterfowl Refuge is also located on the Guntersville Reservoir and lies sixteen miles downstream from the Mud Creek Project. This project is six miles west of Scottsboro, Alabama, and has within its boundaries some 6,700 acres of land and water. The four above projects have a combined total of 27,036 acres of land and water within their boundaries.

This land is Federally owned, having been purchased by the Tennessee Valley Authority prior to the construction of the Pickwick, Wheeler, and Guntersville Dams. A land use forecast was prepared by the Autority for the land above normal pool level for each of the reservoirs, and those areas that were classified for wildlife development were done so on the recommendation of personnel of TVA's Game Division, the Fish and Wildlife Service and the Alabama Department of

Conservation. Soon after the classification was made by the Authority, the Alabama Department of Conservation was notified that this land was available to them for wildlife use provided the Department submitted a management plan for the areas wanted that met with the approval of TVA. During the period of 1940 - 1948, there was a considerable amount or correspondence between State and TVA officials concerning this land, and in the fall of 1947, Biologist Francis X. Lueth spent a short time in the vicinity of the Swan Creek project prior to his being transferred to the Mobile Bay Waterfowl Project.

On September 14, 1948, a Pittman-Robertson waterfowl development project for the Tennessee River was approved by the Fish and Wildlife Service and the State of Alabama. A project leader was employed on October 15, and since that time a full-time refuge manager and a heavy equipment operator have been employed. The areas set up for wildlife use, by TVA, were inspected by the Project Leader, and the State submitted management plans to the Authority for its approval on the four most desirable areas. The Authority approved the plans, and the State of Alabama and the Tennessee Valley Authority entered into an agreement whereby all crop, pasture, "cut and filled' slough margins, and dewatered sloughs whould be managed by the State primarily for waterfowl. This agreement states that any management practices carried out by the State must in no way conflict with TVA's program of navigation, flood control, malaria control, and other primary factors influencing the land's original purchase. At the present, this agreement is of a temporary nature and may be terminated by either party at any time by giving written notice to the other party 90 days in advance of the termination of the agreement; however, the State has been assured that, after a period of several years operation under this plan, a more accurate determination of land requirements can be made, and TVA will consider a more definite arrangement under a formal lease or by actual transfer of title to the land.

The four managed areas are each a project within itself as different techniques are required for each to obtain the maximum benefits for waterfowl. The three waterfowl management areas will be open to the public for hunting and the only restrictions will be those imposed by the State and Federal laws regulating the hunting seasons. The refuge will be closed indefinitely to the hunting of ducks and geese, however, when the upland game population has increased to such an extent that the removal of the surplus is justified, then a managed hunt and a fur trapping program will be initiated.

During the summer months, the Wheeler and Pickwick Reservoirs are subject to waterlevel fluctuations of five or more feet to prevent the breeding of the Anopheles mosquito. This fluctuation is carried out by a gradual process of lowering the reservoir pools each day for five or six days: then the waterlevels are brought to within a few inches of the original mark. This program is maintained throughout the summer until the end of the mosquito breeding season, which is usually in September. This water fluctuation and other malaria control practices, which are carried out by TVA, practically eliminate all desirable aquatic vegetation in the reservoirs such as Brasenia schreberi, Chara sp., Potamogeton diversifolius and P. americanus. The Guntersville Reservoir has an average fluctuation of two feet and does produce some aquatic food plants, but these are not found in sufficient quantity to provide food to hold a very large wintering population of waterfowl; because of this lack of natural food, agricultural grain crops that are grown in the fields adjacent to the reservoirs must provide the bulk of the food

needed to carry out the waterfowl development program. These foods will be discussed later.

During the winter months of 1949 - 1950, 5,989 acres of land were leased to 118 farmers on the four projects by the Project leader. In general, this land has been rented on a sharecrop basis. The State receives as rent one-fourth the yield of all summer grain crops such as: corn, grain sorghum, and soybeans, which are left in the field unharvested for waterfowl. A number of the farmers on the projects plant a considerable acreage to crimson clover, oats, and wheat each fall. These crops usually produce a fair yield of harvested seed that provides the farmer with a cash crop in mid-summer, and they are used extensively by both ducks and geese during the winter months for green browse. One-fourth the yield from these crops may be taken as harvested seed or exchanged with the farmers for a like value of additional grain which will be left in the field unharvested for waterfowl use. If lespedeza is sown for hay, the State's rent of one-fourth of the field's area is taken in a border strip near woods or hedgerows to provide food and cover for quail and doves. If the lespedeza is combined for seed, the rent is then taken in harvested seed which is used to seed eroded hillsides and burned out sections of pine plantings. The field borders and seeded strips have been used extensively by both quail and doves during the winter.

Cotton, though it has no value for wildlife, has been permitted on the projects. There is a considerable acreage leased to farmers for grazing. The State's rent on land planted to cotton and used for grazing is paid by the farmer in seed. The kind of seed and the delivery date is specified in the farming contract. This seed is used by project personnel to make additional food and browse plantings on the projects. Where open land is too steep to be used for agricultural row crops, the farmers are encouraged to establish permanent pasture mixtures of clover and rye grasses. These pastures are green during the winter months, and when they are located near the reservoirs edge are used extensively by both ducks and geese.

A winter cover crop of vetch, crimson clover, caley peas, Austrian peas, oats and vetch, or wheat and vetch is required for each farmer to maintain and increase the fertility of the soil. The number of acres each farmer is required to plant depends upon the total number of acres he is cropping to summer grains. These winter cover crops not only prevent soil erosion but also make the fields more enticing to waterfowl, as both grain and green browse are available in the same field. The small grains containing a heavy mixture of vetch, which are taken in as rent, are distributed to the farmers on the project to make additional cover crop plantings. In doing so, better cooperation is obtained from the farmers, and a much larger acreage of winter legumes are planted.

To make the grain available in the fields to waterfowl on the areas open to shooting, it has been possible in most instances to have the grain foraged by cattle and hogs. The farmer is well pleased to be able to do this and gladly leaves a portion of his crop in addition to the rent. On the refuge where no hunting is allowed, the grain is dragged to the ground by the farmers who run their harrows over the field cutting down all standing corn or grain sorghum in the field. Much better waterfowl use is obtained on grain fields where all stalks have been cut than on those partially so.

One of TVA's dewatering projects is located within the boundaries of the Swan Creek Waterfowl Management Area. This slough and backwater area was diked off from the main reservoir by TVA and is pumped dry during the summer and

allowed to refill during the winter months. By planting grain crops that will mature in 90 days or less such as: corn, grain sorghum, soybeans, buckwheat, and millet in the slough's bottom during this dry period, an abundance of food is provided for waterfowl when it is flooded. This dewatered slough presents a development problem that is entirely different from any other dewatered area on the entire Tennessee River excepting one located on the nearby Wheeler National Wildlife Refuge. Prior to the impoundment of the Wheeler Reservoir twenty-six years ago, this 2,500 acres of swamp and low bottom land was covered with a dense stand of timber ranging in diameter from a few inches to over five feet. This timber was cut by reservoir clearing crews, and today these stumps are still sound in spite of the fact that they have been completely submerged in water for this long period of time. In the shallow flooded sections of the slough and around the water's edge, dense stands of button bush, sweet gum, ash, water and willow oak are present. The amount of work involved over an area this large made it impracticable to have the stumps and coppic removed by heavy equipment on a contract basis; so it was recommended by the Project Leader that a crawler tractor equipped with a dozier blade and a heavy Athens "bush and bog" harrow be purchased to be used in stumping and clearing the dewatered slough. An International TD-18 crawler tractor with a twelve foot blade, and an Athens harrow weighing 4,400 lbs. were purchased to be used jointly on this project and on the Statewide Turkey Project. This tractor and harrow will be used on other areas of the project to remove hedgerows and push back field edges to increase their value for waterfowl. In addition the following equipment has been purchased from project funds: one Ford tractor with dual wheels and hydraulic lift harrow, one John Deere model A tractor with a six-foot heavy-duty harrow, and one grain drill. Two metal grain bins have been purchased and erected on the Swan and Mud Creek projects to provide storage space for seed and grain taken in as rent on the project.

As soon as the slough bottom was dry enough to support the TD-18, clearing the stumps from the slough was begun. Working conditions in this slough cannot be compared with similar work on higher ground, as the water table is very close to the top of the ground and a break-through of the dry crust may mean an entire day lost in getting the tractor out on firmer ground. In some part of this slough there are over 400 stumps per acre; however, some of these stumps are small and require only a light push from the tractor to bring them out of the ground. For the larger stumps, it is sometimes necessary to spend as much as thirty minutes on each stump before it can be pushed out with the tractor. If no time is lost from being stuck or there is no break-down of equipment, an average of five acres can be cleared in a twelve hour day. As no two days of operation are the same, it is almost impossible to arrive at an average cost to clear an acre of stumps in this slough, however, from records kept during the past summer we have found that it was possible to clear some parts of this slough for as low as $5.00 per acre and at other times the cost ran as high as $25.00. The high cost on some parts of the slough are due to the size and number of stumps per acre, loss of time being stuck, and the replacement of broken cable on the TD-18. These figures will also apply to the clearing of brush and trees from around the slough's margin as seepage from the main reservoir keeps this part of the slough wet. As soon as the stumps are out of the ground, they must be piled before discing can begin. The Jeep truck is used in hauling all the stumps that are small enough for three men to load, and the John Deere tractor with a log chain and hook is used to drag the

larger ones. Those that are too large for the farm tractor are pushed to the stump pile by the TD-18. These stump piles will eventually be burned, but they will be left in the slough until next summer so that some of the dirt will be washed off the stumps this winter when the slough is flooded. The piles of brush will also be burned next summer. As soon as a field is cleared of stumps, it is cut with the Athens "bush and bog" harrow and planted. This harrow does a good job of discing in the reverted brush land, however, it has been necessary to cut these areas as much as three times before they could be planted. Twelve to fifteen acres may be cut in one day's operation if no time is lost from being stuck, and will cost on an average of $3.00 per acre.

During the past summer, approximately 450 acres have been cleared, cut, and planted by project personnel, and at least 100 acres of this have been reclaimed from dense stands of brush. These 450 acres were planted to corn, grain sorghum (Martin's combine milo, hegari, kaffri corn, and shallu or Egyptian wheat), soybeans (red Tanner, yellow mammouth, and Ogden), millet (proso, brown top, cattail, Tennessee, and golden), and buckwheat (common, Japanese, and tartarian). The grain sorghums and buckwheat are considered the best for planting in the dewatered slough. The grain sorghums may be planted as late as July 20 and will still make mature seed heads before frost in late October. The buckwheat can be sown from July 20 through August 20 and they will make mature seed before frost. The millets are an early maturing crop, but do not hold the seed very long after they are mature. For this reason they are not considered as good a crop for use in the dewatered slough as the sorghums and buckwheat.

By using the Ford tractor equipped with the hydraulic lift harrow, we produced an abundance of waterfowl food along with the reservoir margins that have been growing worthless marsh grasses. These food strips have been planted to millet, soybeans, and buckwheat. The buckwheats are best suited for these plantings as it is generally late in the summer before the water drops low enough to permit discing and seeding. Of the three varieties of buckwheat that were planted, the tartarian seems to be a little more tolerant to the low wet areas than either the common or Japanese; however, none of the three will stand flooding for any length of time. On the more fertile parts of the slough and on the slough margins the yield of seed per acre is estimated to over 1,000 lbs. The plantings of buckwheat, soybeans, and millet that were made on the marginal and "cut and filled" sloughs were well used by both ducks and geese.

By late summer, the reservoir waterlevels have dropped several feet, and hundreds of acres of mudflats are exposed. These mudflats are sown to rye grass and provide an abundance of green browse for ducks and geese during the winter. The common and Italian rye grass seed are used, and both varieties will stand several days of flooding before being killed. Four to five tons of rye grass seed are sown on the mudflats each fall by using a cyclone hand seeder. These flats are seeded at the rate of 25 - 30 lbs. of seed per acre at a cost of 70¢ per acre. The cost is slightly higher when the seed is sown by laborers than it is when it is sown by airplane at 60¢ per acre, but less seed is wasted, and a much better coverage is obtained when the seed is sown by laborers using the cyclone seeders. The seeding of mudflats to rye grass begins in late August and continues until it is too cold for the seed to germinate which is usually in early November. If rye grass is sown too early the plants will be tough and very little use will be made of the plantings by either ducks or geese.

The first migrant ducks to arrive on the reservoirs are the blue-winged teal which begins to pass through in late August. By mid-November, the fall migration is well underway, but the peak of the migration is not reached until late December or early Janaury. The bulk of the birds on the Wheeler and Pickwick reservoirs is made up of mallard, black, gadwall, ring-necked, scaup (lesser) and baldpate, and over fifty percent of the total population is made up of mallard and black ducks. On the Guntersville Reservoir the bulk of the fall migration is made up of mainly ring-necked and scaup ducks with the mallard and gadwall making up only a small per cent of the total population. The first migrating geese to be seen on the reservoirs are the blue and snows that begin to pass through in September and October. These birds seldom stay over ten to fifteen days on the reservoirs before going further south. Canada geese have been seen as early as August 24 but do not arrive in any number until late November and are seldom seen any later than April 1. During the fall and winter months of 1949 - 1950, a waterfowl census was taken on the project areas and on that part of the reservoirs that will be affected by any development work that will be done on each project. The results of these counts by reservoirs are as follows: Pickwick Reservoir – ducks of all species 1,350; geese (Canada) 102; coots 19; Wheeler and Wilson Reservoirs – ducks of all species 552,796; Canada geese 4,050. These figures include the waterfowl on the Wheeler National Wildlife Refuge, and at the time this census was made there were only 5,000 ducks and 50 Canada geese on the Swan Creek Project. Guntersville Reservoir (Mud Creek Management Area and North Sauty Refuge) ducks of all species 7,785, and Canada Geese 750. This gives a total waterfowl population for the entire Tennessee River in this state to be approximately 61,931 ducks for all species and 4,902 Canada geese. The dewatering project within the Swan Creek area was not flooded until January 14, 1950, as TVA had not completed the dikes on the east end of the project. Soon after the slough began to fill with water, the number of ducks and geese seen on the area increased each day. During mid-February, an estimated 2,500 Canada geese and 32,000 ducks of all species were using the Swan Creek Waterfowl Management Area.

This project is now entering its third year of operation. During the first year, more time was spent in obtaining the four project areas than was spent in making them more attractive to waterfowl. A good start has been made in stumping, clearing, and planting in the dewatered slough in spite of a very wet year. Though the slough has been almost totally flooded on two occasions, there will be an abundance of food produced below the 556′ contour in the dewatered area, and the marginal plantings on the other projects have produced more grain than was expected for a first year planting. Posting of the Refuge has been completed, closing the area to hunting for the first time in the history of the area.