

BIG LAKE

NATIONAL WILDLIFE REFUGE

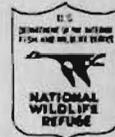


BIG LAKE NATIONAL WILDLIFE REFUGE, an area of wooded river bottom in the midst of a flat cotton-growing plain in the northeast corner of Arkansas, was the third inland refuge established in the Mississippi Flyway. An Executive Order signed by President Woodrow Wilson in 1915 created what was then known as the "Big Lake Reservation". This 10,000-acre area is administered by the Bureau of Sport Fisheries and Wildlife in the U. S. Fish and Wildlife Service of the Department of the Interior.

Big Lake, like Reelfoot Lake in western Tennessee, was formed as a result of the New Madrid earthquake in the winter of 1811-12. Little River, which flows through the center of the lake, spread out a distance of five to seven miles when the land sank as an effect of the earthquake. The banks of the lake extend from near Manila, Arkansas on the west to Thorn Ridge on the east. The refuge consists essentially of the lake thus formed, and the river valley immediately above the lake.



UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Bureau of Sport Fisheries and Wildlife



BIG LAKE NATIONAL WILDLIFE REFUGE

- Location - Extreme northeast corner of Arkansas in Mississippi County, 25 miles west of the Mississippi River.
- Description - Lake created in the winter of 1811-12 by the New Madrid Earthquake. Established in 1915 as a refuge and now consists of 9,900.7 acres. Land area is covered with cypress, willow, water elm, swamp privet, ash, river birch, hackberry, water locust, and traces of other species of bottom land hardwoods.
- Personnel - Permanent: refuge manager, clerk-typist, biological technician and laborer. Temporary: one to three.
- Objective - One of five refuges located within close proximity to the Mississippi River to provide wintering habitat for waterfowl. Peak populations are approximately 250 Canada geese and 20,000 ducks, primarily mallards. The refuge is an important production area for the wood duck. Provides a limited amount of outdoor recreation for the western part of Mississippi County.
- Management - Refuge personnel farm approximately 150 acres on two units at opposite ends of the refuge. Crops are corn, milo, millet and rye grass. The crops are left in the fields to be harvested by ducks and geese. The lake is drawn down as low as possible during the summer to expose mud flats which produce large quantities of red root sedge and wild millet. There are approximately 3,000 acres of open water, 6,000 acres of swamps and 900 acres of upland. During the summer, while the lake is at a low level, heavy equipment is used to clear brush from segments of the swamp and the clearings planted to Jap millet. With the refuge farms, the dewatered mud flats and the reclaimed swamps, an ample food supply is provided for migrating waterfowl.
- Public use - From 15,000 to 20,000 visitor-days for the purpose of picnicking, fishing and hunting. Hunting is permitted annually for squirrels.
- Annual O & M - \$35,000 to \$40,000.
- Problems - A severe fluctuation of the lake level and heavy silt present almost insurmountable problems. The lake in the late summer is only a few inches deep but may rise to a depth of more than 12 feet in the spring. At its high point, silt enters the lake at a rate in excess of 800 ppm. No plant life exists in the lake and only species of rough fish can tolerate these conditions. Willow infestation is a serious problem and to prevent their spread the lake draw down must be delayed until they have cast their seed. This often prevents a significant amount of mud flats from being exposed long enough for annual plants to emerge. A large population of raccoons inhabit the thousands of acres of swamps which provide ideal habitat for them. They do serious damage to corn crops and are a limiting factor in wood duck production.

Big Lake Refuge was established to serve as a resting and feeding area for migratory waterfowl. It is strategically located near the bottom of the Mississippi Flyway funnel, and is used by thousands of ducks and geese during their fall and spring migrations. The refuge extends northward ten miles along the Little River channel from State Highway 18 to the Missouri line. The greatest east-west distance is three miles. In addition to waterfowl, mammals like raccoons, minks, rabbits, muskrats, and squirrels are common, and occasional signs of deer are observed. Almost 200 species of birds are on the official bird-list, copies of which are available at refuge headquarters.

Civilization's demands for more farmland continually affects the area. On two sides of the refuge, deep ditches carry floodwaters from the north, where a network of drainage ditches delivers tons of silt from every rain. Before this runoff reaches the refuge area, it flows rapidly in ditches. Upon reaching the refuge, the water slows due to the decreased land gradient, and spreads over a wide area of Big Lake, dropping much of its heavy silt. The silt deposition has reached such proportions that small boats now have difficulty maneuvering in portions of the lake that once provided excellent fishing and motorboating. Prior to a late river rise in 1945, the open part of the lake had deep, clear water and abundant aquatic vegetation. The silt from this late rise smothered out vegetation, and muddy water and fluctuating water levels has kept it from returning.

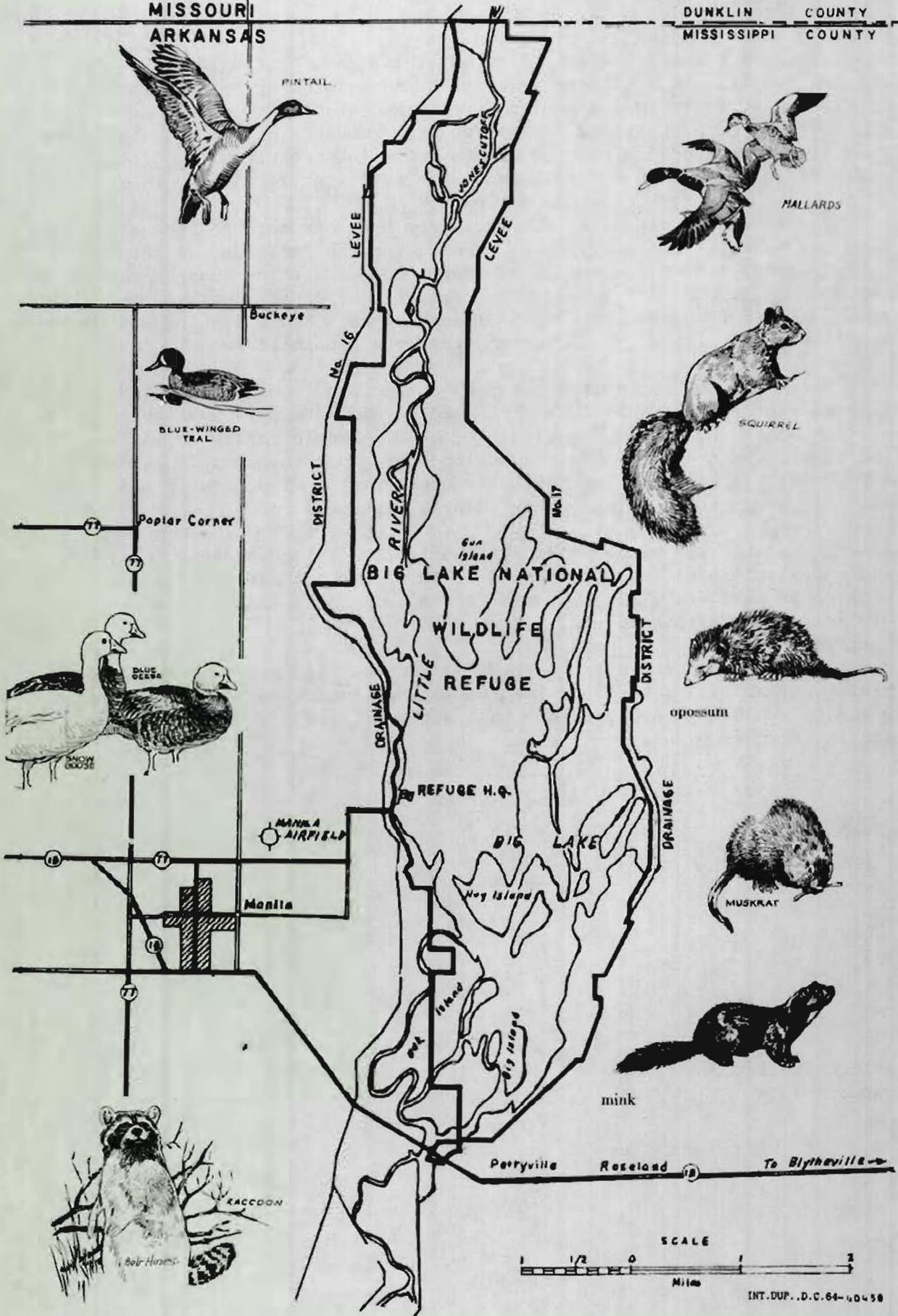
Big Lake Refuge has about 3,000 acres of open water. Another 3,000 acres is flooded most of the time, but contains stands of cypress, willow, and buttonbush. The only remaining virgin cypress in this part of Arkansas is found here. Vegetation on the rest of the refuge ranges from marsh to hardwood ridges. In an area that is characterized by clean farming, the refuge offers an abundance and variety of upland cover, including the hardwood ridges, scattered trees and brush, and dense woods.

There is a very limited amount of land in Big Lake Refuge that can be cleared and farmed for wildlife. Such a program is now being carried out. Only a small acreage is sufficiently well-drained to be planted in corn. The remainder is planted to millet or similar crops which are left in the field and completely harvested by waterfowl.

Blue-winged teal and pintail ducks usually arrive the last week in August, to be soon followed by other waterfowl. Blue and snow geese use the refuge as a resting place in late October before continuing their flight to the Gulf Coast. The first heavy flight of mallards normally arrives during the first two weeks of November. The peak concentration of waterfowl, usually consisting of about 90 per cent mallards, is reached in December. Canada geese may be seen occasionally. After the waterfowl leave in the early spring, many shorebirds stop for a few days. Songbirds are present in great variety, including both migrant and resident species.

MISSOURI
ARKANSAS

DUNKLIN COUNTY
MISSISSIPPI COUNTY



Big Lake was originally called Lake Michigama by the Indians, many of whom remained in a village near Thorn Ridge for a number of years after the tribes were removed to Indian Territory. Such noted chiefs as Chickasawbe, Corn Meal, and Kershottee with remnants of their tribes hunted deer, turkey and bear along the lake and the lower environs of Little River, and buffalo on the plain to the west with early settlers.

The refuge is closed to visitors from November through February. Visitors are welcome, without special permit, for the remainder of the year during daylight hours, although any portion of the refuge may be closed under certain conditions. However, such areas will be clearly marked, and visitors are cautioned to watch for these "Closed" signs. Sport fishing with pole and line is permitted. Firearms and pets are prohibited at all times.

There are two recreation parks on the refuge. One is situated at the extreme southern end. At this park a concession stand is available for renting boats and purchasing fishing tackle. Picnic tables and outdoor cooking facilities are available. A public boat launching ramp is maintained, permitting boat travel into the State of Missouri. The park is located just off of Highway 18, 4 miles east of Manila, Arkansas.

The other park, located one-half mile from refuge headquarters, has sanitary facilities, an approved water supply, and picnic tables and outdoor cooking facilities. This park also has a swimming area and receives the highest amount of public use.

Refuge headquarters is located two and one-half miles northeast of Manila, Arkansas. For refuge information not contained in this leaflet, write to the Refuge Manager, Big Lake National Wildlife Refuge, Box 65, Manila, Arkansas 72442.



Grain crops such as corn, milo and wheat are very attractive to waterfowl. In 1965 a total of 123,971 acres of agricultural crops were produced on national wildlife refuges throughout the country. Most lands farmed are by a private farmer on a share basis with the governments part left in the field for waterfowl. This system has provided thousands of bushels of grain for waterfowl at a very small cost to the government.



One of the primary functions of many national wildlife refuges is to provide feeding and resting areas for wintering waterfowl. The response made by waterfowl to management techniques designed to accomplish this objective has been so spectacular that serious problems are being created by the heavy concentrations of ducks and geese in some areas.



Wood ducks are one of the few species of waterfowl which does not seek the northern section of the continent for nesting. It has been known to nest at all latitudes in the United States. It is also unique in that it nests in the cavities of trees. This characteristic has probably been a limiting factor in its growth in the South caused by the competition of the many other cavity dwellers.



In some instances it is possible to convert areas having no value for waterfowl to extremely attractive sites. This was accomplished here by removing the brush from a swamp, diking, growing milo and flooding. The initial cost for such units is usually high, however, they are highly productive and continue producing for many years with little additional cost. The farming is usually done by a co-operator for a share of the crop.



To be attractive, wood duck nesting boxes must be built to certain specifications. They are built from both wood and metal. It appears that wooden boxes are more acceptable when boxes are first introduced into a new area. Other forms of wildlife have also been found to nest in these boxes. Shown here is a hooded merganser with a full clutch of eggs.



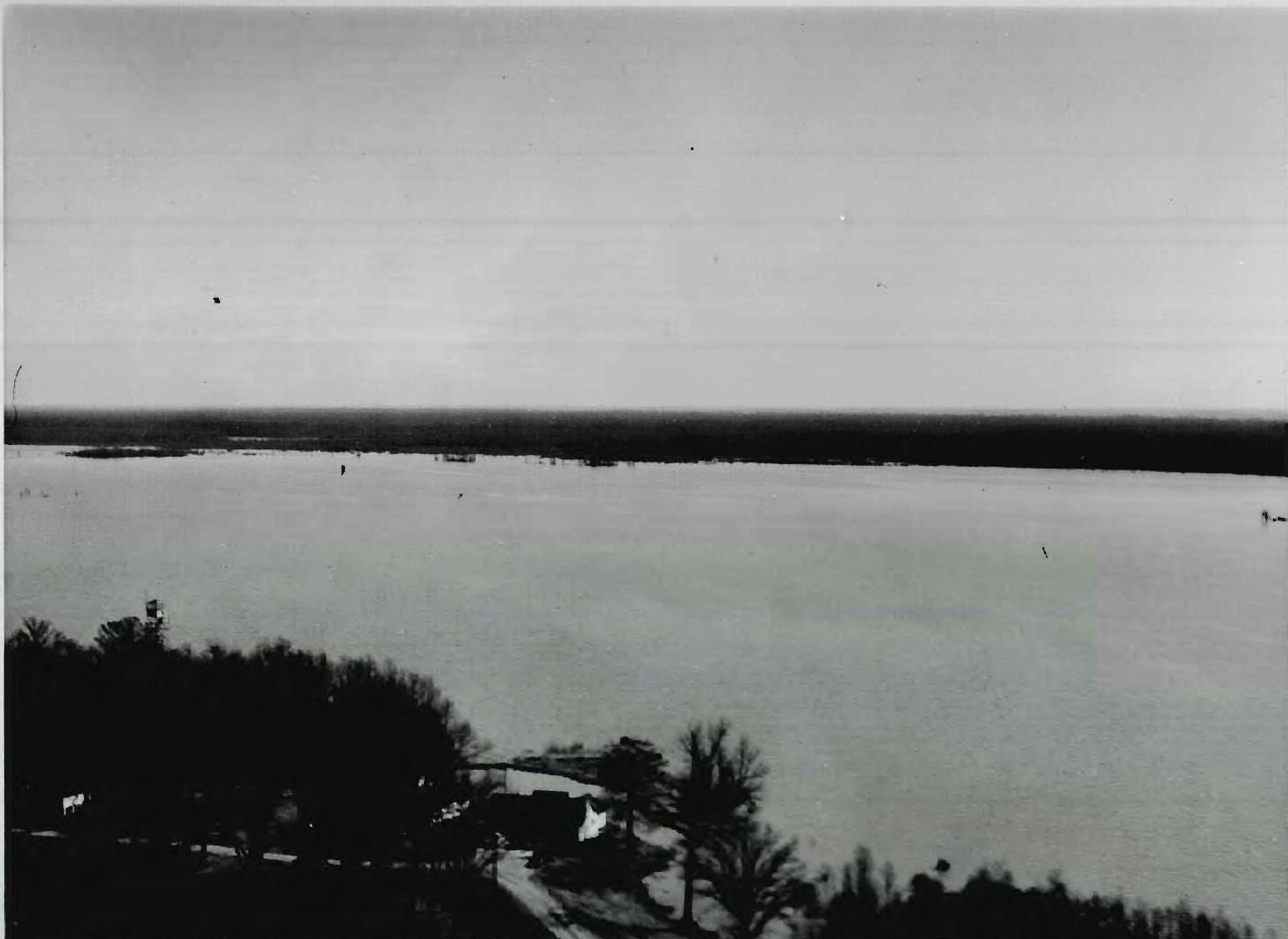
National wildlife refuges provide outstanding opportunities for nature studies. Many refuges have or are developing nature trails bisecting good wildlife areas and making available to the general



The refuge is situated between two large floodway levees and has become a large sump collecting the drainage from a 2,500 square mile area of south-east Missouri. Samples of water taken from the lake while at flood stage contained silt at a rate of 825 ppm. The dilemma: To thick to drink and to thin to plow.



Increased production of wood ducks in an area usually is followed by an increase in predation. In the south-east predators take many forms. One of the major problems to evolve from the artificial nest box program is that of designing a nesting box which will exclude all predators. This has been difficult as evidenced by this photo. The snake probably does not realize that he has climbed into a "predator proof" box.



Big Lake was created in 1811-12 by the New Madrid Earthquake. The opening shown here is the largest of several which make up the lake. The depth varies during the year ranging from only a few inches to more than 10 feet. There are approximately 3,000 acres of permanent water.



Many areas of the country are seeing their hardwood timber disappear at an ever increasing rate and the land converted to other uses. In some sections of the country the only timber remaining is on areas established for wildlife management such as national wildlife refuges.



Outdoor recreation is a secondary objective of most national wildlife refuges. Since refuges very often contain lakes or streams, recreation associated with water is that which is most often available. Camping is usually not permitted; however, exceptions are made for Boy Scout units such as that shown here whenever possible.



Man with his desire to better his economic position has, in many areas, brought large segments of the country under his almost complete control. This has eliminated many forms of wildlife from the area and changed the habits of others. Refuges located in such areas have contributed heavily to sustaining wildlife as it originally was.



It is essential that the decline of water levels in a lake-marsh-swamp type unit be under close control. Areas which are permitted to fluctuate with little control are soon dominated by a dense brushy growth which closes out all sunlight and annual seed producing plants are prevented from emerging. The advance of brush is retarded by delaying the draining of surface water until the perennials have cast their seed.



Marsh areas which are covered with shallow turbid water are most productive if the water can be drained off in the summer. Herbaceous seed producing plants are given a chance to emerge from the rich silt deposits which make up most shallow water areas. After the seed crop has matured, placing water over the area again provides some of the best feeding places possible for waterfowl.



In an attempt to increase production among wood ducks artificial nesting sites have been erected by many conservation organizations. These nesting boxes when properly located are readily acceptable by wood ducks and in some sections of the country are making an important contribution to growing populations.



Where conditions are unsuited for meeting the objectives established for refuges it is possible in some instances to apply practices which bring about more favorable conditions. In this instance a swamp has been cleared of the dense growth of brush to permit the seeding of millet which will be consumed by waterfowl as they migrate south for the winter.



Controlling water levels is one of the more important methods of manipulating habitat. Refuges which have facilities for draining and flooding impoundments easily are generally the most efficient and productive.



Most of the refuge is made up of brushy swamp dominated by such species as willow, water elm, swamp privet and cypress. These areas contain surface water except when the lake is low. They provide ideal habitat for raccoons but are of low value for waterfowl usage.



One of the most serious problems that must be contended with is that of severe fluctuating water levels. Each year, usually in the spring, the refuge is completely flooded to a depth of several feet except for two small mounds at refuge headquarters.



All refuge equipment is stored in the headquarters area. The area is spacious and no problem is encountered except during the annual floods. Fortunately the high water period usually lasts for only two weeks or less.



Public use can be an effective management tool on national wildlife refuges. Here, commercial fishermen are permitted to harvest rough fish from a refuge lake. Removing the fish will allow the water to clear up promoting the growth of aquatic plants and the re-emergence of game fish. The fishermen are permitted to sell the rough fish and the operation, which improves waterfowl and game fish habitat greatly, costs the refuge very little.

MISSISSIPPI FLYWAY

