

APPENDIX 3

D-R-A-F-T

Big Lake Greentree Management Plan

Introduction

Greentree reservoirs are managed forested wetland systems which promote seasonal flood cycles to enhance feeding and foraging habitat for a wide range of wetland dependant wildlife species. Historically, greentree reservoirs (leveed bottomland timber that is artificially flooded) were developed to attract waterfowl during the fall and winter hunting season. Studies have shown that flooding these units the same time and depths year after year resulted in a reduction in acorn production and tree vigor, as well as causing timber mortality (Missouri Conservation Commission).

Drainage is the critical factor in the proper management of greentree reservoirs. Water retention during the growth period can kill many mast species within one season (Rudolph and Hunter 1964); therefore, drawdown must be initiated early enough to ensure complete water removal by the time trees break dormancy. Drainage problems are likely to occur in unusually wet years due to the flat terrain and impervious soils that is characteristic of greentree sites. Increased seasonal rainfall and heavy natural flooding may prevent complete dewatering by early spring and result in soil saturation late into the growing season. Unchecked beaver activity can inhibit good drainage, and water from heavy summer rains may remain longer in some greentree reservoirs than on surrounding natural hardwood bottomland (Newling 1981). These problems can be successfully solved if corrective measures are implanted promptly. Chief management responsibilities are recognition of these and other local impediments to effective water removal and prompt initiation of remedial action

To ensure that greentree reservoir habitat is available for generations to come, the following management techniques will be implemented:

Management Criteria

- A.** Flooding shall not commence before leaves begin to turn color in the fall. The actual dates at which flooding commences should vary from year to year over several year periods.
- B.** To ensure that foods are available to dabbling ducks, the Greentree reservoirs should be gradually flooded to a depth of six to eighteen inches, with a maximum of twenty-four inches (excluding channels). The Greentree reservoirs should be flooded to different depths from year to year and even within the same fall-winter period.
- C.** Gradual draw down shall begin early to ensure that the majority of the impoundment is drained before new leaves appear in the spring unless precluded by natural flooding.
- D.** Dewatering of the areas should be completed slowly, one-inch water level per day or less. Nutrients associated with leaf litter decomposition that promotes invertebrates and good timber

vigor usually peak in early spring. A rapid dewatering of a Greentree unit flushes away these nutrients.

E. Water control structures shall remain open during time of draw down to facilitate water, nutrient and/or organism exchanges.

F. The reservoir shall not be flooded more than five consecutive years followed by at least one dry year with control structures completely open. This will result in reducing water stress that could be responsible for declines in growth and mast production, poor natural regeneration and/or mortality often associated with hydrological changes of the soil.

G. Snags will be allowed to remain standing to provide habitat for cavity nesting species.

H. No timbering or significant modification to existing wetland vegetation shall occur within the impoundment. Any forest manipulation within the impoundment shall be restricted to those activities that promote the growth of mast producing trees.

- 1.** The management of the Greentree reservoirs should be a documented process. Items to be recorded include:
 - (1) When flooding of each reservoir begins and commences.
 - (2) The average depth and any water manipulations conducted during the flooding cycle.
 - (3) When release of the flood waters begins and commences.
 - (4) Rain events that flood the timber and any actions implemented to remove the water.
 - (5) When waterfowl arrive and when they leave the area for the season.
 - (6) Dates of sightings of endangered species or species uncommon to the area.

References:

Conservation Commission of Missouri, Managing Wetlands: Greentree Reservoirs (Flooded Live Timber)

Mitchell, Wilma A. and Newling, C.J. 1986 "Greentree Reservoirs", U.S. Army Engineers Waterways Experiment Station, Technical Report EL-86-9.

Newling, C.J. 1981. "Ecological investigation of a greentree reservoir in the Delta National Forest, Mississippi", U.S. Army Engineers Waterways Experiment Station Misc. Paper EL-81-5.

Rudolph, R.R., and C.G. Hunter. 1964. "Green Trees and greenheads", Pages 611-618 In J.P. Linduska, ed. Waterfowl Tomorrow. U.S. Department of Interior, Washington, D.C.

U.S. Army Corps of Engineers, Charleston District. 1997. Interagency Guidance Concerning Authorization, Siting, Construction and Management of Greentree Reservoirs