

TABLE 1. Principal spring foods of eastern wild turkey collected during three sampling periods at Shelby Forest Wildlife Management Area in southwestern Tennessee.¹

Common Name	Food Scientific Name	1978		1979		1980		3 Spring Average	
		% Vol. N = 37	% Occ.	% Vol. N = 10	% Occ.	% Vol. N = 40	% Occ.	% Vol. N = 87	% Occ.
Seeds									
corn	<i>Zea mays</i>	0.0	0.0	0.0	0.0	8.4	10.0	2.8	3.7
pecan hickory	<i>Carya illinocensis</i>	0.0	0.0	0.0	0.0	7.5	20.0	2.5	6.7
shagbark hickory	<i>Carya ovata</i>	0.0	0.0	0.0	0.0	3.9	10.0	1.3	3.3
American beech	<i>Fagus grandifolia</i>	T	2.7	1.2	40.0	T	4.0	T	15.5
oak	<i>Quercus</i> spp.	T	2.7	13.9	20.0	1.7	57.5	5.2	26.7
elm	<i>Ulmus</i> spp.	1.3	8.1	0.0	0.0	T	10.0	T	6.0
sugar hackberry	<i>Celtis laevigata</i>	63.9	86.5	52.6	60.0	45.2	85.0	53.9	77.2
common pawpaw	<i>Asimina triloba</i>	1.4	2.7	7.7	10.0	5.6	2.5	4.9	5.1
soybean	<i>Glycine max</i>	0.0	0.0	0.0	0.0	9.9	15.0	3.3	5.0
common poison-ivy	<i>Toxicodendron radicans</i>	T	29.7	T	20.0	3.0	20.0	1.0	23.2
Virginia creeper	<i>Parthenocissus quinquefolia</i>	T	16.2	T	10.0	T	2.5	T	9.6
flowering dogwood	<i>Cornus florida</i>	T	8.1	2.1	30.0	7.8	20.0	3.3	19.4
unknown seeds		2.0	16.2	T	20.0	1.3	15.0	1.1	17.1
Green forbs									
bread wheat	<i>Triticum aestivum</i>	7.2	16.2	13.4	40.0	4.9	20.0	8.5	25.4
bristle grass	<i>Setaria</i> spp.	11.6	24.3	1.0	30.0	0.0	0.0	4.2	18.1
oxalis	<i>Oxalis</i> spp.	8.8	35.1	T	10.0	T	12.5	2.9	19.2
unknown forbs		T	8.1	2.1	20.0	T	32.5	T	20.0
Animal material Grit ²		T	34.6	3.3	30.0	T	25.0	1.1	29.9

¹Food items present in trace amounts are represented by the letter T.

²Grit was not used in tabulation of percent volume; the total volume of grit present was 235.8 ml with an average of 2.7 ml/gizzard; 88.5% of the gizzards examined contained grit.

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A SUMMARY OF CHANGING STANDING CROPS OF NATIVE BROOK TROUT IN RESPONSE TO REMOVAL OF SYMPATRIC RAINBOW TROUT IN GREAT SMOKY MOUNTAINS NATIONAL PARK

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ABSTRACT

The objectives of this project were to determine if exotic rainbow trout could be eradicated from mountain streams using electrofishing techniques and to determine the response, if any, by native brook trout to such removals in Great Smoky Mountains National Park from

1976 to 1981. Backpack electrofishing was time-consuming and labor-intensive. The technique was useful for population control but not eradication of rainbow trout. Brook trout standing crops increased as a result of the removal of rainbow trout, suggesting that sympatric rainbow trout had a negative effect on native brook trout in the park.

INTRODUCTION

Moore et al. (1983) reported on the standing crops of sympatric brook trout and rainbow trout in four tributaries in Great Smoky Mountains National Park. During that study (1976-1979), rainbow trout were heavily fished using backpack electrofishing techniques. The purpose of this note is to provide data from two additional years (1980 and 1981) of work and to summarize the findings. The objectives of the project were to determine if rainbow trout could be eradicated using this electrofishing techniques and to determine the response, if any, of brook trout to rainbow trout removal.

METHODS

Detailed information about the study areas, methods and experimental design was given by Moore et al. (1981 and 1983). It should be noted, however, that the project was modified in 1980 and 1981. While Silers Creek and Taywa Creek continued to be electrofished in an attempt to eradicate the rainbow trout, rainbow trout were returned to Beetree and Sams Creeks after sampling. Furthermore, Beetree was not sampled in 1981, and our efforts at Sams Creek were reduced to one 100-m portion of original section 3 (Moore, et al. 1983 and 1984).

RESULTS AND DISCUSSION

Rainbow trout standing crops were drastically reduced but the species was not eradicated from any stream. We were unable to reduce their standing crops to less than about 1 to 2 kg/ha (Table 1).

Sympatric brook trout standing crops had increased substantially in all streams by the end of the project (Table 1). Gradual annual increases were observed for Sams Creek and Silers Creek populations, but there were abrupt increases in Taywa Creek in 1981 and 1980 in Beetree Creek. Allopatric brook trout stream sections in Taywa, Starkey (tributary of Sams Creek), and Silers Creeks showed similar variations in standing crops as did the rehabilitated sections (Table 2). These populations served as partial controls for the rehabilitated brook trout populations. Contemporaneous fishery studies in the park also indicated that the observed decline of rainbow trout in this study could be best explained as a result of the extensive and intensive electrofishing efforts (Moore et al., 1983 and 1984).

These data support the following comments and conclusions. First, the time-consuming and labor-intensive electrofishing technique is useful for population control but not eradication of rainbow trout in these park tributaries. Second, although the 1981 (1980 for Beetree Creek) standing crops of rehabilitated populations were similar to those of allopatric brook trout populations in the park, the Silers Creek and Sams Creek sympatric populations appeared closer to recovery than those in Taywa Creek and Beetree Creek. Third, the observed increases in standing crop of the rehabilitated sympatric brook trout populations suggests that rainbow trout have had a negative effect on native brook trout in the park.

LITERATURE CITED

Moore, S. E., B. L. Ridley, and G. L. Larson. 1981. Changes in standing crop of brook trout concurrent with removal of exotic trout species, Great Smoky Mountains National Park. Research and Resources Management Report 37, Uplands Field Research Laboratory, Great Smoky Mountains National Park, Twin Creeks Area, Gatlinburg, Tennessee, USA.

Moore, S. E., B. Ridley, and G. L. Larson. 1983. Standing crops of brook trout concurrent with removal of rainbow trout from selected streams in Great Smoky Mountains National Park. *North Amer. J. of Fish. Manage.* 3:72-80.

Moore, S. E., G. L. Larson, and B. Ridley. 1984. Management concerns for population control of exotic rainbow trout in streams of a natural area park. MS. Great Smoky Mountains National Park, Gatlinburg, TN.

TABLE 1. Standing crops (kg/ha) of sympatric populations brook trout and rainbow trout in rehabilitated sections of Beetree Creek, Sams Creek, Silers Creek and Taywa Creek, 1976-1981.

Stream	Year	Rainbow Trout Standing Crop	Brook Trout Standing Crop
Beetree	1976	20.8	6.1
	1977	3.8	9.6
	1978	3.9	10.2
	1979	3.5	6.0
	1980	1.9	16.8
Sams	1976	16.3	10.1
	1977	1.7	13.1
	1978	3.1	23.6
	1979	1.0	19.1
	1980	4.1	30.7
Silers	1976	28.1	6.3
	1977	19.5	9.6
	1978	9.6	17.8
	1979	3.4	19.5
	1980	0.8	16.5
Taywa	1976	26.3	2.3
	1978	6.2	6.4
	1979	3.8	4.2
	1980	1.2	7.0
	1981	2.1	20.4

TABLE 2. Standing crops (kg/ha) of allopatric populations of brook trout in Silers Creek, Starkey Creek and Taywa Creek, 1977-1981.

Stream	Year	Standing Crop
Silers	1977	15.8
	1978	31.7
	1979	30.5
	1980	24.4
	1981	25.0
Starkey	1977	12.8
	1978	18.1
	1979	19.6
	1980	17.3
	1981	31.8
Taywa	1978	22.7
	1979	12.8
	1980	11.9
	1981	24.0