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Age and Growth of Carp from Beaver Reservoir, Arkansas

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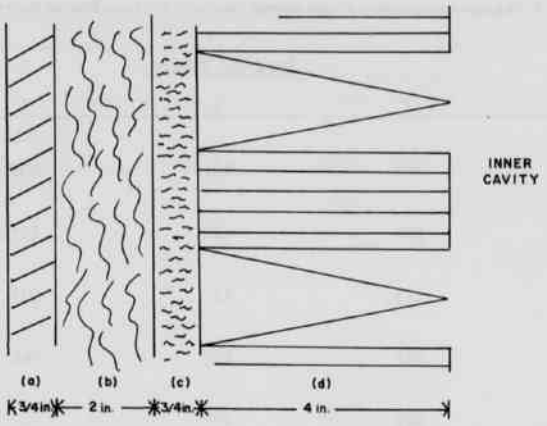

Figure 2. Cross section of the construction of a wall segment. (a)-plywood, (b)-rock wool insulation, (c)-acoustical ceiling tile, (d)-foam wedges.

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AGE AND GROWTH OF CARP FROM BEAVER RESERVOIR, ARKANSAS

The common carp, *Cyprinus carpio* Linnaeus, originally Asiatic, has been introduced into the United States as early as 1876 (Carlander, 1969; Pflieger, 1975). There has been no published information on the growth of carp from Arkansas reservoirs. This paper describes the age and growth of carp from Beaver Reservoir, an impoundment on the White River.

Beaver Reservoir (36°05' to 36°27'N and 93°47' to 94°06'W) located in northwest Arkansas, is a multipurpose impoundment on the White River for flood control and hydroelectric power. Dam construction was completed in 1963, became operational in 1966, and attained the designated surface area of 11,400 ha in 1968.

Of the 127 carp used in this study, 49 were collected in 1968 by rotenone, and 58 and 20 fish in 1969 and 1970, respectively, by 2.5, 3.8, 5.0, and 7.5 cm^3 gill nets. Upon capture, total length in millimeters and total weight in grams were recorded, and a scale sample was taken from the body at the tip of the pectoral fin above the lateral line. Scale impressions on plastic strips were studied at 40X magnification. Scale radius and distances to each annulus were measured in the anterior field. Age determinations were made by counting the scale annuli.

The length (330 - 668 mm) - weight (454 - 3,500 g) relationship was log W = 3.07 log L - 4.88985. The regression coefficient of 3.07 was not significantly different from 3.0 ($t_{115} = 0.46$), indicating that the weight of carp increased as the cube of length.

The coefficient of condition, K, was calculated for each of the carp from the expression, $K = \frac{W}{L^3} \times 100$. The coefficient for the individual fish ranged from 0.94 to 2.16 with an average value of 1.31. The average coefficient of the Beaver Reservoir carp was similar to that of carp from Smoky Hill River (1.34) but higher than the Cedar Bluff Reservoir carp (0.94) (Stucky and Klassen, 1971). The condition coefficient did not change significantly with fish length ($t_{115} = 0.77$). English (1952), and Stucky and Klassen (1971) found the condition coefficient to decrease with increase in length. Average condition coefficients for the year classes are given in Table 1. Comparison of the year classes 1965 through 1968 resulted in a significant difference in the coefficients ($F_{3,120} = 5.41$), and this was due to high condition coefficient for the 1968 year class.

The total length (L)-scale radius (S) relationship for the Beaver Reservoir carp was L = 81.55 + 0.82S with a correlation coefficient of 0.76. The average calculated lengths at the time of annuli formation are given in Table 2. Comparison of lengths of age-groups I, II, and III revealed no difference at the 0.01 level between the year classes 1965 through 1968. Therefore, the postimpoundment growth was the same for all the year classes.

Year Class	Average K_{TL}	Number of Fish
1963	1.15	1
1964	1.30	2
1965	1.31	15
1966	1.28	54
1967	1.29	41
1968	1.48	14

Table 1. Average coefficient of condition (K_{TL}) for year classes 1963 through 1968.

Table 2. The average calculated total lengths (mm) of carp from Beaver Reservoir.

Year Class	Annulus Number 1	2	3	4	5
1963	229	364	451	508	578
1964	287	389	434	497	529
1965	265	363	421	537	-
1966	282	387	455	565	-
1967	283	387	465	-	-
1968	299	416	-	-	-
Weighted Average	282	384	444	527	554
Number of Fish	127	123	45	8	2

We wish to thank Mr. Louis E. Vogele, South Central Reservoir Investigations for reviewing the manuscript.

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ADDITIONS TO THE FISH FAUNA OF PINEY CREEK, IZARD COUNTY, ARKANSAS

Notice is given of the addition of three species to the known ichthyofauna of Piney Creek, Izard County, Arkansas. Matthews and Harp (Proc. Ark. Acad. Sci., 28:39-43, 1974) reported a total of 44 species from the watershed. On 17 October 1975, we collected one small adult specimen of *Salmo gairdneri* (Rainbow trout) from a swift pool on Piney Creek in SE¼, Sec 5, T 16 N, R 10 W (Station P-1 of Matthews and Harp). This locality is approximately 1.2 km upstream from the confluence of Piney Creek with White River, from which the specimen doubtlessly migrated. Piney Creek is too warm in the summer to permit survival of salmonids. The next day we collected two specimens each of *Notropis greenei* (Wedgespot shiner) and *Labidesthes sicculus* (Brook silversides) approximately 0.3 km upstream from the previous location. The creek at this locality consisted of alternating gravel-rubble riffles and shallow pools. The specimens of *S. gairdneri*, *N. greenei*, and *L. sicculus* are deposited as collections number 4894, 4896, and 4897, respectively, in the Arkansas State University Museum of Zoology.

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AN UNUSUAL ACCUMULATION OF BAT REMAINS FROM AN OZARK CAVE

A total of at least 10 species representing six genera of vespertilionid bats has been identified from 1445 skulls collected from the floor of a limestone cave in the Sylamore Ranger District, Ozark National Forest, Arkansas (Table 1). This accumulation of skeletal material was found in a passageway divided into two distinct zones on the basis of constant or fluctuating temperatures. Fluctuating temperatures were encountered at the anterior end of the passageway and were obviously related to ambient temperatures at the nearby entrance; constant temperatures were recorded throughout the remainder of the passageway. The passageway was dry and ranged from one to two meters in height. Bat remains varied from skulls coated with calcite (calcium carbonate) crystals to decomposing carcasses and included several mummified specimens. Of the 10 species identified, four are considered tree bats and are recognized to rarely enter caves; the remaining species typically utilize caves as habitat during some portion of their annual activity cycles.