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Additions to the Strawberry River Ichthyofauna

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General Notes

Sigmodon, *Microtus spp.*, and *Oryzomys* appear to be the major sources of food in the owls diet (Phillips, 1947; Parmalee, 1954; Jemison and Chabreck, 1962; Marti, 1974). Wilson (1938) reports *Synaptomys cooperi* as a food item in Michigan, but it represented less than 1% of the total prey consumed by the owl. In the west, Barn Owls feed primarily on pocket gophers *(Thomomys spp.)* and have fed almost exclusively on pelagic birds (mainly petrels) on islands around Baja, California (Banks, 1965).

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Table 1. Food of a Barn Owl in Craighead County, Arkansas, expressed as the number of individuals taken and the percent occurrence.

Prey Species	Species Occurrence (93) total	Percent Occurrence
Synaptomys cooperi	50	54
Sigmodon hispidis	16	17
Microtus spp.	14	15
Passerines	6	7
Blarina carolinensis	4	4
Oryzomys palustris	1	1
Cryptotis parva	1	1
Mus musculus	1	1

LITERATURE CITED

BANKS, R. C. 1965. Some information from barn owl pellets. Auk 82:506.

BENT, A. C. 1938. Life histories of North American birds of prey: Part Two. Dover Publications, Inc. New York, N.Y. 140-153.

BOYD, E. M. and J. SHRINER. 1954. Nesting and food of the Barn Owl in Hampshire Co., Mass. Auk 71:199-201.

BURT, W. H., and R. P. GROSSENHEIDER. 1964. A field guide to the mammals. Houghton Mifflin Co., Boston. 3rd ed. 184-186.

GRIMM, R. J., and W. M. WHITEHOUSE. 1963. Pellet formation in a Great Horned Owl: a roentgenographic study. Auk 80:301-306.

JEMISON, E. S., and R. S. CHABRECK. 1962. Winter Barn Owl foods in a Louisiana coastal marsh. Wilson Bull., 74 (1):95-96.

MARTI, C. D. 1973. 10 Years of Barn Owl prey data from a Colorado nest site. Wilson Bull., 85 (1):85-86.

PARMALEE, P. W. 1954. Food of the Great Horned Owl and Barn Owl in East Texas. Auk 71:469-470.

PHILLIPS, R. C. 1947. Notes on some mammals of Hancock Co., Ohio. J. Mamm. 28(2):189-190.

SMITH, C. R., and M. E. RICHMOND. 1972. Factors influencing pellet egestion and gastric ph in the Barn Owl. Wilson Bull., 179-186.

WALLACE, G. J. 1948. The Barn Owl in Michigan. Mich. State Coll. Agr. Exp. Sta. Tech. Bull., 208:1-61.

WILSON, K. A. 1938. Owl studies at Ann Arbor, Michigan. Auk 55 (2):187-197.

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ADDITIONS TO THE STRAWBERRY RIVER ICHTHYOFAUNA

In their initial list of the fishes of the Strawberry River, Robison and Beadles (1974, Fishes of the Strawberry River system of northcentral Arkansas, Proc. Ark. Acad. Sci. 28:65-70) reported 95 species of fishes inhabiting the system. Favorable climatic conditions during the past four years have allowed collections of fishes to be made in the lower wide stream sections of the Strawberry River where steep banks, mud substrates and normally deep pools make collecting especially difficult during most of the year. Collections in these areas during the interim have documented 12 species not previously reported by Robison and Beadles (1974) including the least brook lamprey, *Lampetra aepyptera* (Abbott), chestnut lamprey, *Ichthyomyzon castaneus* Girard, shovelnose sturgeon, *Scaphirhynchus platorynchus* (Rafinesque), paddlefish, *Polyodon spathula* (Walbaum), gravel chub, *Hybopsis x-punctata* Hubbs and Crowe, fathead minnow, *Pimephales promelas* Rafinesque, crystal darter, *Crystallaria* (=*Ammocrypta*) *asprella* (Jordan), western sand darter, *Ammocrypta clara* Jordan and Meek, harlequin darter, *Etheostoma histrio* Jordan and Gilbert, Ouachita darter, *Percina ouachitae* (Jordan and Gilbert), stargazing darter, *Percina uranidea* (Jordan and Gilbert), and river darter, *Percina shumardi* (Girard).

Robison and Beadles (1974) originally suggested that the two lamprey specimens reported from the system were *Lampetra lamottei* (Lesueur) based on geographic proximity of other known localities to the Strawberry River; however, subsequent collections confirm the presence of two additional species of lampreys. *L. lamottei* remains unknown from the Strawberry River system. Seven specimens of mature, breeding *L. aepyptera* taken on 4-6 April 1975 substantiate the presence of the least brook lamprey in the system. Collections were taken from the following locations: IZARD Co.: McJunckins Branch SE of Franklin (Sec. 3 and 4, R7W, T17N) (one specimen); unnamed tributary of Little Strawberry

River, SE of Oxford (Sec. 30, R8W, T18N) (2); Bull Pen Creek, NW of Wiseman (Sec. 10, R8W, T18N) (1). SHARP Co.: Unnamed tributary of Big Creek (Sec. 33, R5W, T16N) (3).

On 15 October 1978, a single 118 mm specimen of *Ichthyomyzon castaneus* was collected from the Strawberry River at St. Hwy. 115 (Sec. 17, T16N, R3W), Lawrence County. The specimen was still in the process of transforming into an adult; however, several clues to its identity were noted including a well-developed intestine, developing bicuspid teeth in the inner circle of the oral disc and relatively large buccal funnel. Dr. George A. Moore, Oklahoma State University, kindly verified the identification.

Commercial fishermen have provided documentation of the presence of *Scaphirhynchus platorynchus* and *Polyodon spathula* near the confluence of the Strawberry and Black rivers where these two large river forms probably utilize the resources of the Strawberry River when conditions are favorable.

The collection of a single specimen of *Pimephales promelas*, undoubtedly a bait release, was taken from the headwaters of the river approximately 8 mi. S.W. of Salem, Fulton County, on 4 April 1975. This represents the only record of this species in the system.

An excellent collecting site in Lawrence County just upstream from the St. Hwy. 115 bridge (Sec. 17, T15N, R3W) 1 mi. N. of Jesup has yielded records of the additional seven species denoted in this paper. Six collections have been made to date from this locality. A total of eight specimens of *Hybopsis x-punctata* have been collected at this location over small gravel in the main current. The richness of the diversity of the Hwy. 115 collecting site is demonstrated by the collection of a total of 51 species, including 17 species of etheostomatine fishes.

Five percid fishes are added to the stream list. Nine specimens of *Cystallaria* (=*Ammocrypta*) *asprella* were taken in three collections at St. Hwy. 115. A total of four *Ammocrypta clara* was taken over sand habitats at the Hwy. 115 location and N. of the St. Hwy. 58 bridge near Poughkeepsie. Fifteen specimens of *Etheostoma histrio* have been collected from the St. Hwy. 115 collecting locality. Forty-seven specimens of the two cryptic species, *Percina ouachitae* and *P. uranidea*, have been taken to date from the St. Hwy. 115 locality on four occasions. Specimens of the Strawberry River *P. uranidea* were used in the original description of the snail darter, *Percina tanasi* Etnier, in Tennessee (Etnier, 1976, *Percina (Imostoma) tanasi*, a new percid fish from the Little Tennessee River, Tennessee, Proc. Biol. Soc. Washington, 88 (44):469-488). Thirteen specimens of *Percina shumardi* have also been taken from the Hwy. 115 location, including a large, 60.2 mm SL (71.1 mm TL) male specimen.

With the addition of these 12 species the Strawberry River is now documented to have 107 species. This richness in diversity is exemplary of the upland streams in the Ozark physiographic province and indeed, compares with the richest streams in North America.

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AGE AND GROWTH OF WHITE CRAPPIE, *Pomoxis annularis* RAFINESQUE, FROM A FLOOD-CREATED POND IN MISSISSIPPI COUNTY, ARKANSAS

White Crappie, *Pomoxis annularis* Rafinesque, originally were found in lakes, ponds, bayous, and slow-moving streams and rivers from eastern South Dakota to western New York and south in the Mississippi River and Gulf of Mexico drainage to Alabama and Texas. They have been introduced into other suitable waters (Carlander, 1977). In Arkansas, the white crappie occurs in all major rivers (Buchanan, 1973) and reservoirs (Ball, 1972), comprising a significant portion of the annual sport harvest in both (Morais, 1975). Many growth studies have been done involving white crappie directly or as a sympatric species, as evidenced by the bulk of data compiled on the species by Carlander (1977). This paper describes the age and growth of white crappie in Butterfly Hole, a flood-created impoundment of the Mississippi River.

Butterfly Hole is located approximately 2.2 km north of Tomato, section 7, T14N, R13E, Mississippi County, Arkansas, in an area almost entirely devoted to farming. Butterfly Hole was formed during the Fall-Winter flooding of 1974, by flood-stage waters of the Mississippi River. The hold covers approximately 1.5 surface acres with bottom depths ranging from 0.3 to 10.7 meters. Due to its depth, Butterfly Hole has never been dry since its creation. Many such water bodies are created with each flood period, but most are shallow and dry up during the summer months when temperatures average 91°F (Ferguson and Gray, 1971).

Fifty-four white crappie were collected to determine the growth characteristics of the species in Butterfly Hole, following a complete rotenone kill by the Arkansas Game and Fish Commission.

There is little evidence of sex differences in the growth of white crappie (Carlander, 1977). Therefore, no sexually dimorphic growth patterns were assumed to exist, and no such differentations were attempted.

Scales for study were selected by the use of the "key scale" method suggested by Lagler (1956). Key scales were designated as those from an area approximately 10 back from the head and 5 down from the lateral line along the right side of the fish. Approximately 20 scales were taken from each fish. Total length in mm and total weight in grams were recorded for each fish upon capture.

Scale annuli counts were made by use of an American Optical dissecting microscope in conjunction with an American Optical Model #651, 7.5 volt light source. Distances were measured on each scale using a USDA metric planners rule from focus to each annulus, and from focus to scale margin along the anterior median of each scale.

The age determinations were made by counting the number of annuli. Since collection was made in late summer, after annulus formation (Hall et al., 1954), the age referred to herein represents the number of the last complete annulus.

The length (66-356 mm) - weight (5.5 - 718 g) relationship was Log W = 0.924 Log L + 0.134. The regression coefficient of 0.924 was significantly different from 3.0 ($t54 = 5.33$), indicating that the weight of the crappie did not increase as the cube of length. Figure 1 further illustrates the rapidly decreasing rate of weigh gain of all white crappie within the hole, following impoundment (1974).

The coefficient of condition, K, was calculated for each of the crappie from the expression, $K = \frac{W}{L^3} X\ 100$. The coefficient for the individual fish ranged from 1.45 to 1.95 with an average of 1.64. The average coefficient of the Butterfly Hole crappie was higher than that reported by Whitacre (1952) in Crab Orchard Lake, Illinois (0.67), and higher than that reported by Witt (1952) from Lake Norfork, Missouri (1.32) and Lake Taneycomo, Missouri, (1.33). Average condition coefficients for the year classes are given in Table 1.

The total length (L) - scale radius (S) relationship for the Butterfly Hole crappie was L = 50.98 + 48.53S with a correlation coefficient (r) of 0.96. 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 1975 through 1977. Therefore, the postimpoundment growth was the same for all these year classes.