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than the longnose gar. It appears, therefore, that the size of the daily ration and the rate of digestion are less in the Holosteii than in some of the Teleostei.

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SEXUAL DIFFERENTIATION OF BLUEGILLS BY THE UROGENITAL OPENING

For situations in fishery management, research, and hatchery production which require the sexing of the bluegill (Lepomis macrochirus) on the basis of external features, the difference in appearance of the urogenital openings of males and females offers a reliable method.

The characteristic differences in the male and female urogenital openings are shown in the accompanying photograph.

The pink, fleshy opening of the female resembles a small, swollen, doughnutlike ring--probably the result of a slight eversion of the urogenital tract. The degree of swelling of the ring depends on the season, being greatest during the breeding season. The outside diameter of this fleshy area is considerably larger than that of a male of comparable size.

The male tends to have only a very small fleshy area surrounding the opening: often no fleshy area can be noted. The male opening never presents a ringlike appearance. Usually, depending on the robustness of the male, the opening terminates in a small funnel-shaped pore.

Validity of this method has been tested on pond populations of the bluegill near Columbia. In September and October, 200 bluegills (90 to 144 millimeters in length) were sexed without error, as verified by dissection. After the method was demon-



strated for another researcher, he sexed with complete success bluegills that were taken from a lake during winter. The author correctly and easily sexed bluegills taken from a large impoundment early in May.

This method appears to be limited by sexual maturity of the fish. Once a bluegill has become sexually mature, differentiation seems to be permanent regardless of the season. In central Missouri, sexual maturity and consequent differentiation of the urogenital openings usually occur when the bluegill reaches a size of 75 to 100 millimeters.

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