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## Notes on the external sex characters of *Chanos chanos* Forskal spawners

H. Chaudhuri, J. Juario, R. Samson and R. Mateo

Well-marked external structural differences distinguishing the sexes are not usually present in teleosts excepting a few cyprinodonts in which the male possesses an intromittent organ. Secondary sexual characters, however, are present in the mature adults of many species of bony fishes. In general, females are larger than males excepting a few fishes (murels and some cichlids) where there is parental care. Many fishes, especially the cyprinids, exhibit secondary sexual characters during the spawning season by the bright coloration of the male, appearance of horny tubercles on the snout of male as in blunt-nose minnow *Hyborhynchus notatus* (Ramaswamy and Hasler, 1955), nasal pores and difference in shape, size and length of fins (*Puntius dubius*), roughness of the operculum (goldfish *Carassius auratus*), appearance of bony ridges on the pectoral fin rays of males of Chinese carps (Tang, 1954) and roughness of the pectoral fins in the males of Indian carps (Chaudhuri, 1959).

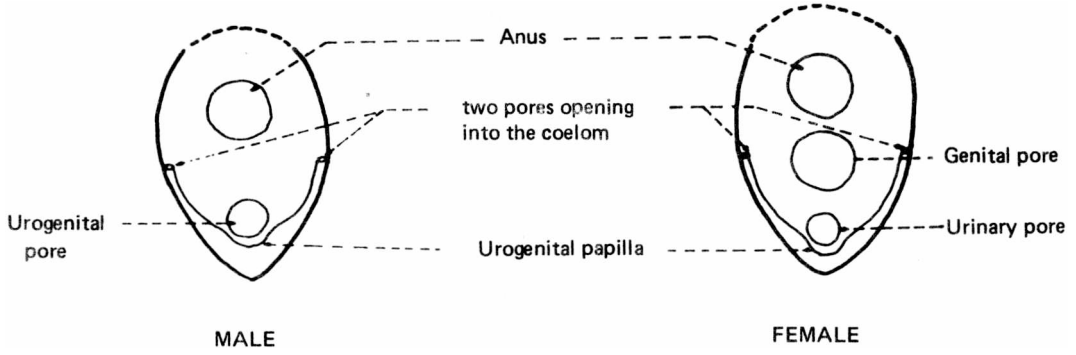
In catfishes, the sex is usually determined from the size and shape of the genital papilla and also in some species from the structure of the pectoral and pelvic fins. In the catfish *Ompok bimaculatus*, the pectoral spine in the male develops serrations which are very prominent during the spawning season (Chaudhuri, 1962), whereas in the kanduli *Arius manilensis*, the pelvic fin in the female is much larger and thicker having a cartilagenous structure in comparison to that of the male which is smaller and thinner (Mane, 1929). In the channel catfish *Ictalurus punctatus*, the male has a single urogenital opening, whereas the female possesses an anterior genital pore and a posterior urinary pore (Norton, et al., 1976).

In our present study, we did not find any visible differences between the sexes with reference to external features such as coloration, shape of head, snout and operculum, presence of tubercles or nasal pores, length, size and shape as well as any roughness in the various fins. However, the anal region of the mature milkfish exhibits discernible anatomical differences in the male and female.

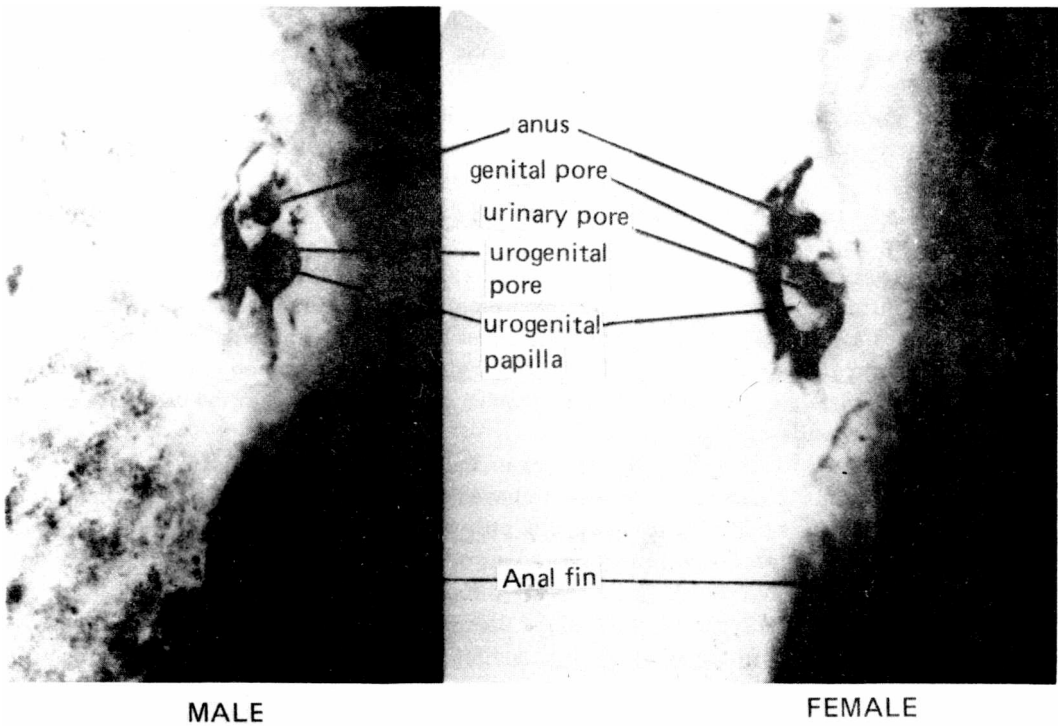
In the males, there are 2 main openings visible externally. These are the anterior anus and the posterior urogenital opening at the tip of the urogenital papilla (Fig. 1 and Plate 1). Internally, the vasa deferentia (male genital ducts) from the testes join into a common duct about 5-10 mm from the urogenital pore (Fig. 2). The urinary pore opens into this common duct from the dorsal side. In addition, there are 2 small pores situated on each side of the base of the urogenital papilla opening ventrally into the coelom.

In the females, there are 3 main openings in the anal region instead of 2 as found in the males. The anteriormost opening is the anus followed by the genital pore. The third opening is the urinary pore which is posterior to the genital pore located at the tip of the urogenital papilla (Fig. 1 and Plate 1). On internal examination, it was observed that the two oviducts join to form one common broad oviduct which finally opens through the genital pore (Fig. 2). In females just as in males, there are 2 lateral pores at the base of the urogenital papilla opening into the body cavity (Fig. 1). The function of these abdominal pores is not known. Similar abdominal pores are also present in sharks and skates. According to Hyman (1942), in spiny dogfish "the pleuroperitoneal cavity communicates with the exterior by means of the abdominal pores. There

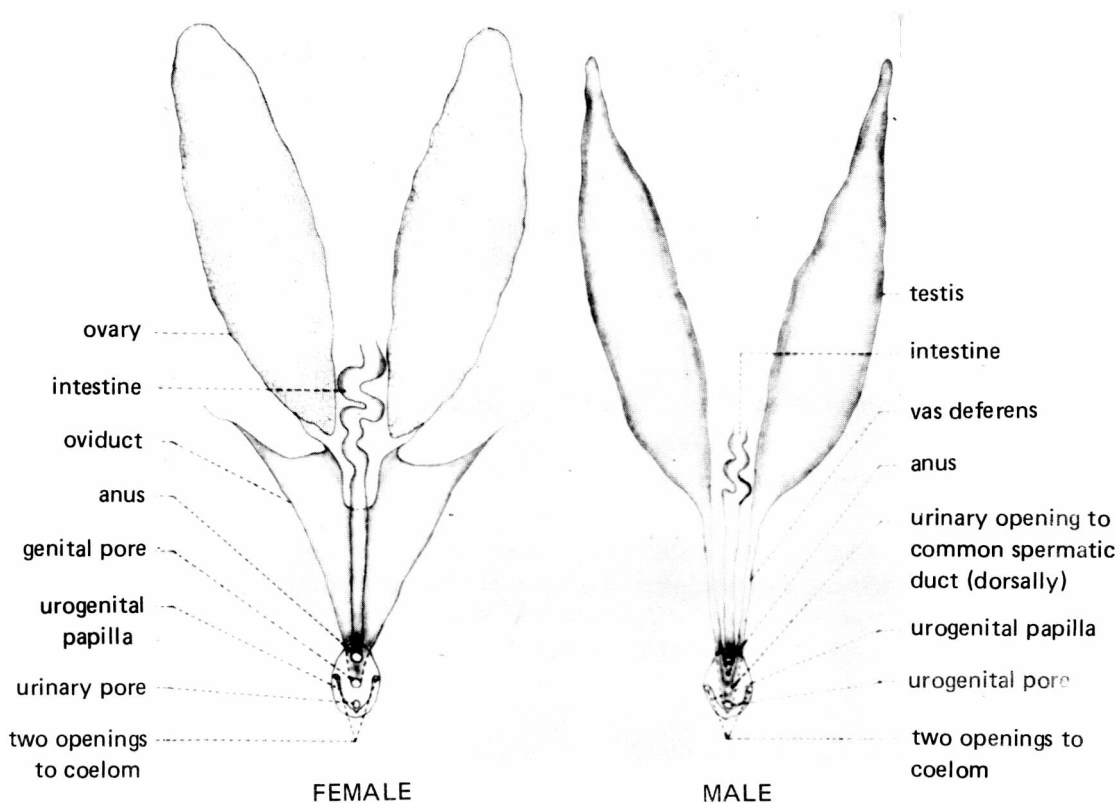
**Fig. 1. Schematic diagram of the anal region of milkfish.**



**Plate 1. Anal region of milkfish.**



**Fig. 2. Schematic diagram of the reproductive organs and anal region of milkfish.**



will be found one on each side of the anal opening (in the skate posterior to the anus), somewhat concealed by a fold or skin. Their purpose is obscure.”

In ripe sabalo, it is easier to distinguish the sexes since milt oozes out of the urogenital pore of the ripe male fish when its abdomen is pressed. The gravid females are identified by their distended abdomens.

Male sabalos are usually smaller in size than females. The weight range of specimens examined at the Tigbauan Station of the SEAFDEC Aquaculture Department varied from 3.5 to 7.0 kg in males and 4.5 to 10.7 kg in females. Specimens studied in the station at Pandan, Antique in 1975 showed that the males varied in weight from 4.1 to 7.4 kg whereas the females had a weight range of 5.1 to 7.7 kg (Tiro, et. al., 1976).

The study on the differentiation of sexes of milkfish based on the external characters is being continued. Our present observation on the anal region of adult milkfish has been used to sex over 60 specimens with 100% accuracy. In fact, this method of sexing has been used regularly in our milkfish breeding experiments leading to successful fertilization of milkfish eggs at Tigbauan. It is felt that the method is practical and accurate for field purposes in sexing milkfish spawners.

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