

Mullet (Family Mugilidae) Diversity in North Carolina

North Carolina is home to three species of mullets: Mountain Mullet, *Dajaus monticola*, Striped Mullet, *Mugil cephalus*, and White Mullet, *Mugil curema* (Tracy et al. 2020; [NCFishes.com](https://www.ncfishes.com)). The family name, Mugilidae, is derived from the Latin, *mugil*, meaning Mullet, which in turn is probably derived from *mulgeo*, meaning suck (Boschung and Mayden 2004 as cited in Powers 2020).

Travelling in active schools in our coastal waters, one may hear mullets referred to as Finger Mullet when they are young adults because of their size and importance as a bait fish, Jumping Mullet because of their tendency to leap out of the water, Silver Mullet, Common Mullet, Black Mullet, Grey (Gray) Mullet, or Callifaver Mullet (<https://www.fishbase.se/Summary/FamilySummary.php?ID=359>). Another vernacular name for mullets that is sure to raise some eyebrows is “Turd Wrestlers”, which originates from the observations that mullets feed on plankton and detritus, which they extract (suck) from the bottom sediments or *via* coprophagy (Powers 2020). However, the American Fisheries Society-accepted common names are more socially and politically acceptable: Mountain Mullet, Striped Mullet, and White Mullet (Page et al. 2013) and each species has a scientific (Latin) name (Appendix 1).

Our mullets range in size from about 356 mm Total Length (14 inches) for Mountain Mullet to about 915 mm (36 inches) for White Mullet to about 1220 mm (48 inches) for Striped Mullet (Kells and Carpenter 2011). All three species are or believed to be catadromous species meaning they live in fresh or estuarine waters, but spawn in the ocean. Mountain Mullet may also be amphidromous meaning they migrate between salt and fresh water, but the migrations are not directly related to spawning but related to some other activity such as feeding (Rohde et al. 2009).

Mountain Mullet is a rarely encountered species in North Carolina waters where it is a seasonal inhabitant of fresh water. It may, however, be more common in U.S. waters than is generally thought because it is difficult to capture with most collecting gear (Pezold and Edwards 1983 as cited in Tracy et al. 2020). Striped Mullet is a seasonal inhabitant in all Coastal Plain river basins and can be found as far upstream as near the Fall Zone near Rockingham (Yadkin basin), at Lillington on the mainstem Cape Fear River (Cape Fear basin), and at Raleigh (Neuse basin). White Mullet has been rarely found distant from brackish and saltwater coastal waters. Vouchered specimens at the North Carolina Museum of Natural Sciences document the species only as far upstream as the Neuse River at New Bern and in Northeast Creek near Jacksonville (Neuse and White Oak River basins, respectively).

As stated previously, mullets are able to convert phytoplankton and benthic organic matter into fish biomass. In turn mullets then become important prey items for piscivorous species such as flounders, Striped Bass, Bluefish, Spotted Seatrout, Red Drum, King Mackerel, Spanish Mackerel, and many other commercially and recreationally important species (Manooch 1984). None of the mullet species are state- or federally-listed species (NCAC 2017; NCNHP 2020; NCWRC 2017), but the recreational and commercial harvesting (take) of both the Striped Mullet and White Mullet are regulated by the North Carolina Division of Marine Fisheries (NCDMF 2020).

Key characteristics for their proper identification include the shape of the head, the presence or absence of an adipose eyelid and an axillary process at the base of the pectoral fin, extent of scalation of the second dorsal and anal fins, and body pigmentation.

Identification Key to the Freshwater and Marine Species of Mullet (Family Mugilidae) in North Carolina

- 1a. Head convex across the dorsal surface (Figure 1). Adipose eyelid absent (Figure 2). Black spot present on the caudal peduncle. No axillary process at the base of the pectoral fin. Yellow areas on fins. Dorsal fin yellow with darkly pigmented areas (Figure 3).....Mountain Mullet, *Dajaus monticola*
- 1b. Head relatively flat on the dorsal surface (Figure 1). Adipose eyelid present in individuals over 30 mm Total Length (Figure 2). No spot on caudal peduncle. Axillary process present at the base of the pectoral fin2

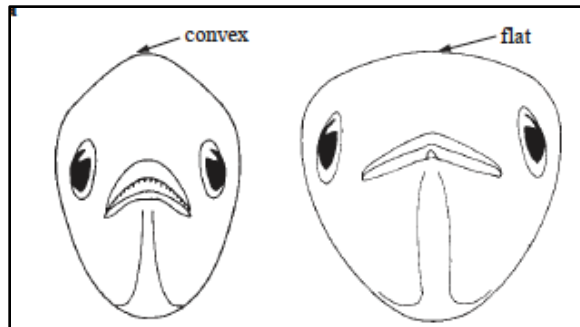


Figure 1. Anterior view of head. Left – Mountain Mullet; Right – *Mugil* sp. Illustrations courtesy of Harrison (2002).

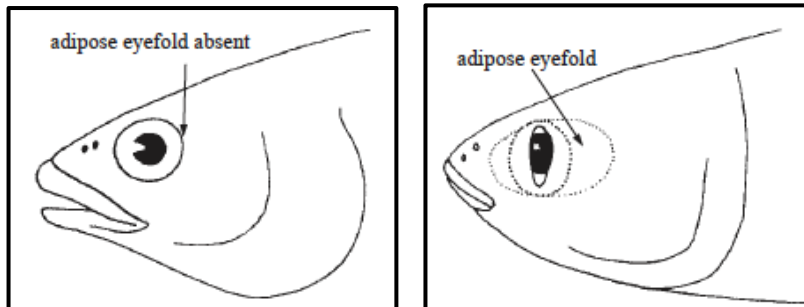


Figure 2. Left – Adipose eyelid absent; Right – Adipose eyelid present. Illustrations courtesy of Harrison (2002).



Figure 3. Mountain Mullet, *Dajaus monticola*.

- 2a. Second dorsal fin and anal fin unscaled (a few scales may be present in the anterior basal portion of both these fins) (Figure 4). Stripes present on body (Figure 5) Striped Mullet, *Mugil cephalus*
- 2b. Second dorsal fin and anal fin well scaled (Figure 4). No stripes present on body (Figure 5). Occurs only in brackish and salt water White Mullet, *Mugil curema*

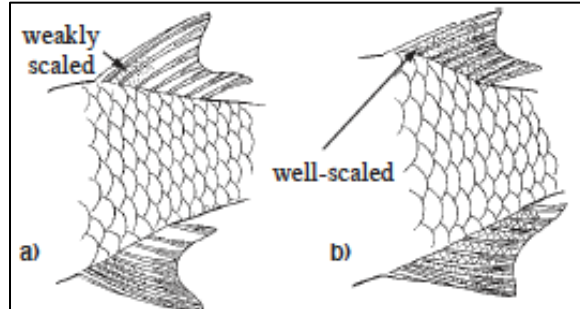


Figure 4. Second dorsal and anal fins. Left – Unscaled or weakly scaled; Right – Well scaled. Illustrations courtesy of Harrison (2002).



Figure 5. Top - Striped Mullet; Bottom - White Mullet.