

Preston Hudlow

BIO 420

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Lab 7 Part B: Feeding Guilds

Introduction:

For this experiment, a sample of freshwater and marine fish was collected to analyze the feeding morphology. By studying the fish's characteristics, we determined its foraging method and feeding guild. The position of the mouth, body shape, and pelvic fins help give key identifications to classify its feeding morphology. Once this data was collected, we were able to make a feeding guild with descriptions for each species.

Materials & Methods:

Although we were not able to go out and collect the fish ourselves, they were collected from Whitehurst Beach (Marine), Elizabeth River (Marine), and Lake Taylor (Freshwater). The methods of collection were either by trawling or seining. Seining involves a “U” shaped net that two people walk parallel and encircle to trap the fish. Whereas trawling you use a boat and a cone-shaped net to capture fish. To euthanize the fish humanely we used MS-222/Tricaine and then 10% Formalin and 70% Isopropyl for preservation. At this stage, we used a caliper to get measurements of the different characteristics of the fish to help with categorizing.

Results:

The fishes collected in the Marine environment were:


A. <i>Chaetodipterus faber</i>	Atlantic Spade fish
B. <i>Dorosoma petenense</i>	Threadfinshad
C. <i>Leiostomus xanthurus</i>	Spot
D. <i>Menidia menidia</i>	Atlantic silverside
E. <i>Menticirrhus americanus</i>	Southern kingfish
F. <i>Trinectes maculatus</i>	Hogchoker
G. <i>Peprilus triacanthus</i>	American butterfish
H. <i>Selene vomer</i>	Lookdown
I. <i>Symphurus plagiusa</i>	Blackcheek tonguefish
J. <i>Synodus foetens</i>	Inshore lizardfish
K. <i>Cynoscion nebulosus</i>	Spotted sea trout
L. <i>Anchoa mitchilli</i>	Bay Anchovy
M. <i>Cynoscion regalis</i>	Weakfish

The fishes collected in a freshwater environment were:

<i>Lepomis gulosus</i>	Warmouth
<i>Lepomis auratus</i>	Redbreast Sunfish
<i>Lepomis microluphus</i>	Red Ear Sunfish
<i>Lepomis macrochirus</i>	Bluegill
<i>Pomoxis nigromaculatus</i>	Black crappie
<i>Micropterus salmoides</i>	Largemouth Bass

Discussion:

Marine Fish:



Selene vomer

- ▶ **Feeding Guild:** Midwater Mesocarnivor
- ▶ **Foraging Method:** Pursuer
- ▶ **Description:** The lookdown has a compressed body shape with long dorsal and anal fins helping with maneuvering in the water column. They feed on small prey in the midwater column making them a midwater mesocarnivor pursuer.



Chaetodipterus faber

- ▶ **Feeding Guild:** Plant-cropping omnivore
- ▶ **Foraging Method:** Grazer
- ▶ **Description:** The Atlantic Spadefish has a distinct compressed body shape. It has long dorsal and pectoral fins to help with balance and maneuverability in the water. Their mouth is positioned at the front, which is important for their feeding habits by sifting through sediments. They feed on a mix of either plant material or animal matter by grazing on the ocean floor.

Dorosoma petenense



► **Feeding Guild:** Midwater Planktivore

► **Foraging Method:** Strainers

► **Description:** The threadfin shad has a compressed body with its pelvic fins positioned abdominal to help with stabilization. The mouth is positioned near the tip of the nose which helps aid with straining. They feed mostly on plankton in the midwater column making them a midwater planktivore.

Leiostomus xanthurus



► **Feeding Guild:** Demersal Mesocarnivore

► **Foraging Method:** Stalker & pursuer

► **Description:** The spot fish has a compressed body with a black spot typically behind the gill cover. It has a long and divided dorsal fin with a forked tail helping it with swift swimming when it comes to staking and pursuing. They feed on benthic invertebrates making them a demersal mesocarnivore.

Menidia menidia



► **Feeding Guild:** Midwater Planktivore

► **Foraging Method:** strainers

► **Description:** The Atlantic silverside has a compressed slender body shape making it agile for swimming in schools. It has two dorsal fins and an anal fin just behind the ventral fins. It is typically found in shallow water feeding on plankton by filtering them with their gill rakers making them a midwater Planktivore strainer.

Menticirrhus americanus



► **Feeding Guild:** demersal mesocarnivore

► **Foraging Method:** stalkers and pursuers

► **Description:** The southern Kingfish has a terminal body shape with large dorsal fins and a forked tail to help it swim swiftly for stalking or pursuing. They have distinct long thin barb-like barbels which are sensory organs used to detect food on the ocean floor making them demersal mesocarnivores.

Trinectes maculatus



► **Feeding Guild:** demersal mesocarnivore

► **Foraging Method:** ambushers and possibly stalkers

► **Description:** The Hogchoker has a depressed body shape. It has a dorsal and anal fin that runs along the length of the body with large pectoral fins helping it maneuver and stabilize while on the substrate at the bottom. They feed on small invertebrates making them a demersal mesocarnivore. Their mouth is positioned at the front and can extend, helping them catch prey right in front of them, making them ambushers/stalkers.

Symphurus plagiusa



► **Feeding Guild:** demersal microcarnivore

► **Foraging Method:** Ambushers

► **Description:** The Black cheek Tonguefish have a depressed body shape with a continuous caudal fin. These fish eat benthic creatures like tiny invertebrates making them a demersal microcarnivor that lie and wait to ambush their prey.

Synodus foetens



► **Feeding Guild:** demersal mesocarnivor

► **Foraging Method:** Ambushers

► **Description:** The inshore lizard fish has an elongated fusiform body shape to help with streamlining on the seafloor. They have sharp needle-like teeth and ambush prey mostly at the bottom making them a demersal mesocarnivor.

Cynoscion nebulosus



► **Feeding Guild:** demersal mesocarnivor

► **Foraging Method:** Stalker and pursuers

► **Description:** The Spotted Seatrout has an elongated fusiform body shape to help it move through water and streamline. They have large mouths with sharp canine teeth to catch prey. They actively hunt making them a stalker and a demersal mesocarnivor.

Anchoa mitchilli



► **Feeding Guild:** midwater Planktivore

► **Foraging Method:** Strainer

► **Description:** Bay Anchovies have a slender compressed body shape to help them swim efficiently in schools. They have a small mouth and typically feed on small planktonic organisms making them a midwater planktivore strainer.

Cynoscion regalis



► **Feeding Guild:** demersal mesocarnivor

► **Foraging Method:** Stalker and Pursuer

► **Description:** The weakfish has an elongated fusiform body shape to help move easily through the water. They have large mouths with sharp canine teeth to grasp onto prey. They mainly eat small fish making them a demersal mesocarnivor stalker.

Peprilus triacanthus



► **Feeding Guild:** Midwater Planktivore

► **Foraging Method:** stalkers and possibly pursuers

► **Description:** The Atlantic Butterfish has a compressed body with a small pointed head that aids in catching small prey. They have a long continuous dorsal fin and a forked caudal fin which aids in agile swimming. It feeds on plankton and small invertebrates within shallow water making them a midwater Planktivore that stalks and pursues.

Fresh Water Fish:

Lepomis auratus



► **Feeding Guild:** demersal mesocarnivor

► **Foraging Method:** Pursuer

► **Description:** The redbreast sunfish has a compressed body shape with a long spiny dorsal fin. They have small sharp teeth and feed on small invertebrates. This would make them a demersal mesocarnivor pursuer.

Lepomis microluphus



► **Feeding Guild:** demersal mesocarnivor

► **Foraging Method:** Pursuer

► **Description:** The redear sunfish has a compressed body with long dorsal fins helping with movement. They have small mouths with sharp teeth to catch prey. They eat small aquatic organisms making them a demersal mesocarnivor pursuer.

Lepomis macrochirus



► **Feeding Guild:** demersal mesocarnivor

► **Foraging Method:** Pursuer

► **Description:** The Bluegill has a compressed body with long spiny dorsal fins for agile swimming. They have a medium sized mouth that's positioned at the front of the head to easily grab prey. They typically eat smaller fish but also can graze on crops. That means they are still a demersal carnivore pursuer and stalker.

Pomoxis nigromaculatus



► **Feeding Guild:** demersal mesocarnivor

► **Foraging Method:** Pursuer

► **Description:** The Black Crappie had a compressed body with large pectoral fins helping them with movement. They have a large mouth that extends with sharp small teeth to catch prey. They typically eat small fish making them a demersal mesocarnivor ambusher.

Micropterus salmoides

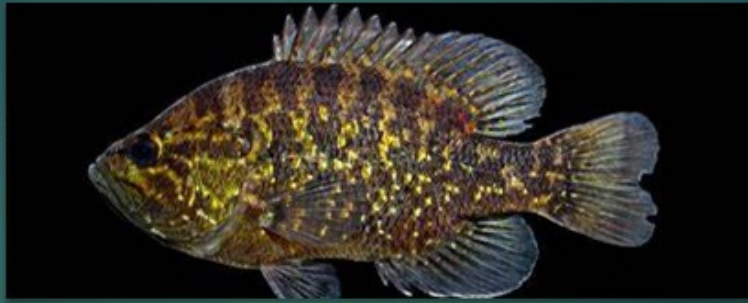


► **Foraging Method:** demersal mesocarnivor

► **Feeding Guild:** Pursuer

► **Description:** The largemouth bass has a long fusiform body great for streamlining. They have a large mouth that extends with sharp teeth to grip prey. They typically eat smaller fish around the seafloor making them a demersal mesocarnivore pursuer.

Lepomis gulosus



► **Feeding Guild:** demersal mesocarnivor

► **Foraging Method:** Pursuer

► **Description:** The warmouth has a compressed body with long pointed dorsal fins to help navigate through the water. They are carnivores with large mouths making them a demersal mesocarnivor ambusher.

Conclusion:

In conclusion, the results of the collection of freshwater and saltwater fish species reveal a diverse group of species adapted to a range of salinity levels. Expected patterns emerged when considering the ecological roles and habitats of these species. Saltwater species, such as the Atlantic Spadefish, Southern Kingfish, and Spotted Sea Trout, are known to be more common in coastal and estuarine environments, demonstrating a preference for brackish or marine waters. Overall, the results largely align with expectations, highlighting the adaptive nature of these species to specific salinity conditions, with clear differentiation between strictly marine species and those that are more tolerant of brackish or freshwater environments. There are some trends, first in freshwater, most of the species' body shapes are compressed with a forked tail for agile movement for catching prey. In the marine environment, most of the species are demersal feeders with sharp teeth for catching prey. This distribution pattern underscores the importance of estuarine and coastal habitats as transitional zones where both freshwater and saltwater species coexist and thrive.