Diel Differences in Abundance and Composition of Ichthyoplankton Influx through Breach Inlet

Courtney Brooks*, David Wilson* and Gorka Sancho
Department of Biology, College of Charleston, Charleston, **SC**

Question

How does the abundance of larval fish vary in day versus night tidal floods at Breach Inlet?

Methods

- 500 micron plankton net lowered off the bridge at Breach Inlet
- Approximately 20 minute tows during flood tides
- 10 tows (5 daytime – 5 nighttime)
- Water volume was measured with flowmeter
- Samples preserved in 95% ethanol

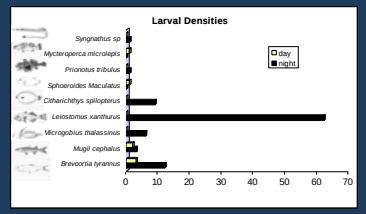
500 micron plankton net

Breach Inlet

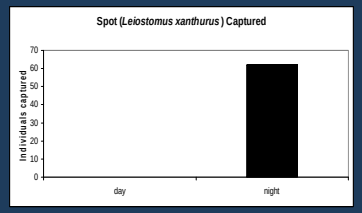
Background

The life cycle of various larval assemblages of fishes begins in the deeper waters of the continental shelf where they are spawned in winter months and then carried by currents through inlets to continue development within the shallow estuaries. These larval species will spend much of their first year in these habitats before they emigrate in the fall (Warlen and Burke, 1990). The objective of this study was to determine abundance during the immigration period of late winter tides.

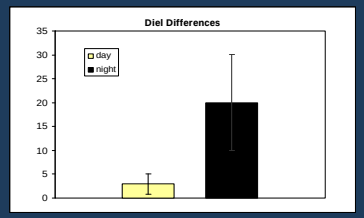
Results



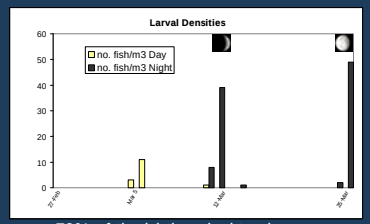
- 63% of the larvae caught were Spot (*Leiostomus xanthurus*), 15% Atlantic Menhaden (*Brevoortia tyrannus*), 9% Flatfish (*Citharichthys spilopterus*), and 6% Gobies (*Microgobius thalassinus*)



- 100% of all Spot (*Leiostomus xanthurus*) were captured at night



- 91% of the ichthyoplankton captured at nighttime flood tides. (p-value= 0.07)



- 79% of the ichthyoplankton larvae were caught on two single nocturnal tows on March 12 and March 25.

Conclusions

- Nine larval fish species were caught during flood tides
- Nocturnal tows caught more larval fishes than daytime floods
  - -Behavioral preference for nighttime influx into estuaries?
  - -Daytime net avoidance?
- No clear correlation was found of larval influx with moon phase.
- Spot (*Leiostomus xanthurus*) were the most abundant larvae caught, as expected due to peak recruitment in Feb. and March (Hildebrand & Cable 1930)
- A larval gag grouper (*Mycteroperca microlepis*) was collected on March 13, before the earliest published collection date of April 2, 1981 (Keener et al. 1988)
- All Bay whiff (*Citharichthys spilopterus*) caught were fully metamorphosed and had completed eye migration

Future Considerations

- Compare more day vs. night tows made on the same dates
- Extend nocturnal tows over multiple lunar cycles to detect possible specific lunar influx periodicities

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* Both undergraduate authors contributed equally to this study

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