The Effects of Biofilms on Invertebrate Settlement

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Katie and Loren collecting samples in the field.

Map of test site at Grice Marine Laboratory

Introduction:

Marine organisms produce scat and chemicals which form a biofilm. This may have an effect on invertebrate larvae settlement. Many invertebrate larvae seem to use these biofilms as cues to settle, while others may be deterred by them in an effort to avoid competition.

Questions:

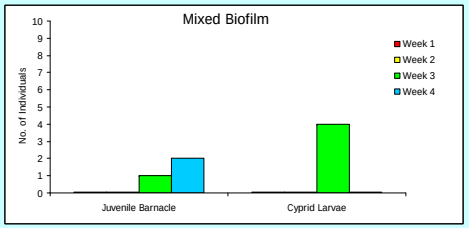
- Do invertebrate larvae have a tendency to settle on surfaces with biofilms?
- If so, do they prefer monospecific of multispecific biofilms?

Tile in the oyster tank accumulating biofilm.

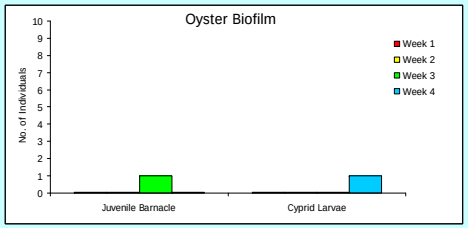
Methods:

- One ceramic tile was placed in an oyster tank to obtain monospecific biofilm while another tile was placed in a mixed invertebrates tank to obtain multispecific biofilms for a week.
- These tiles, along with a clean tile, were put on a cinder block and left in the Charleston Harbor at Grice Marine Lab.
- The tiles were collected after a week and analyzed for settlement.
- This process was repeated for 4 weeks.

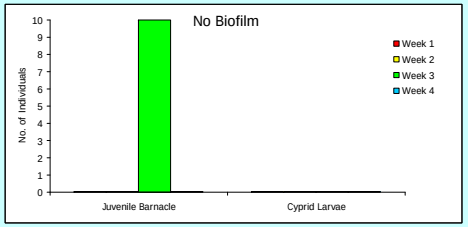
Results:



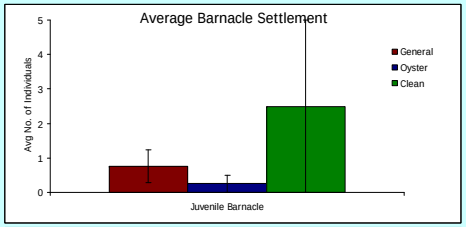
All of the settled species were barnacles (*Chthamalus* sp.) in varies stages of metamorphosis.



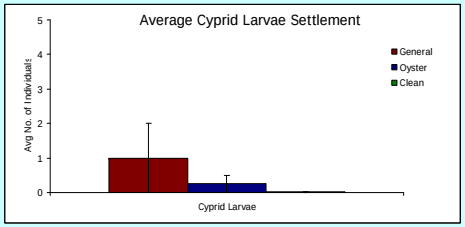
Biofilm tiles from the oyster tank showed the least amount of settlement.



The clean tile had the most settlement. Most occurred during week 3 (March 14 – 20).



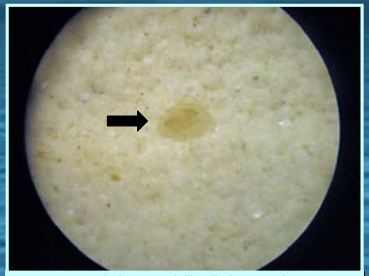
Most species were fully settled barnacles.



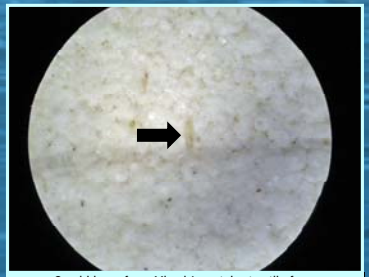
Less cyprid larvae were found.

Conclusions:

- Biofilms appear to be inversely related to settlement.
- Settlement at the location tested during March was almost exclusively barnacle *Chthamalus* sp.
- There seems to be settlement events rather than steady settling throughout the month.



Barnacle from No Biofilm tile from Week 3.



Cyprid larva from Mixed Invertebrates tile from Week 3

Acknowledgments:
Thank you to Dr. Gorka Sancho, Dr. Byrum, Grice Marine Laboratory, SCDNR SERTC, College of Charleston Biology Department.
*Undergraduate Students, CofC Biology Department