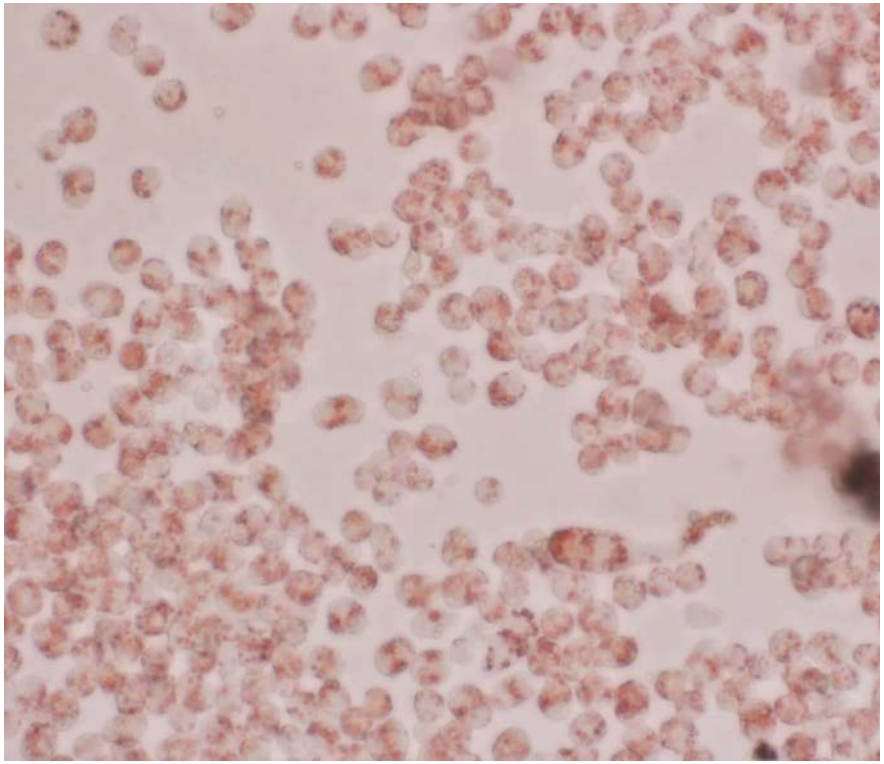
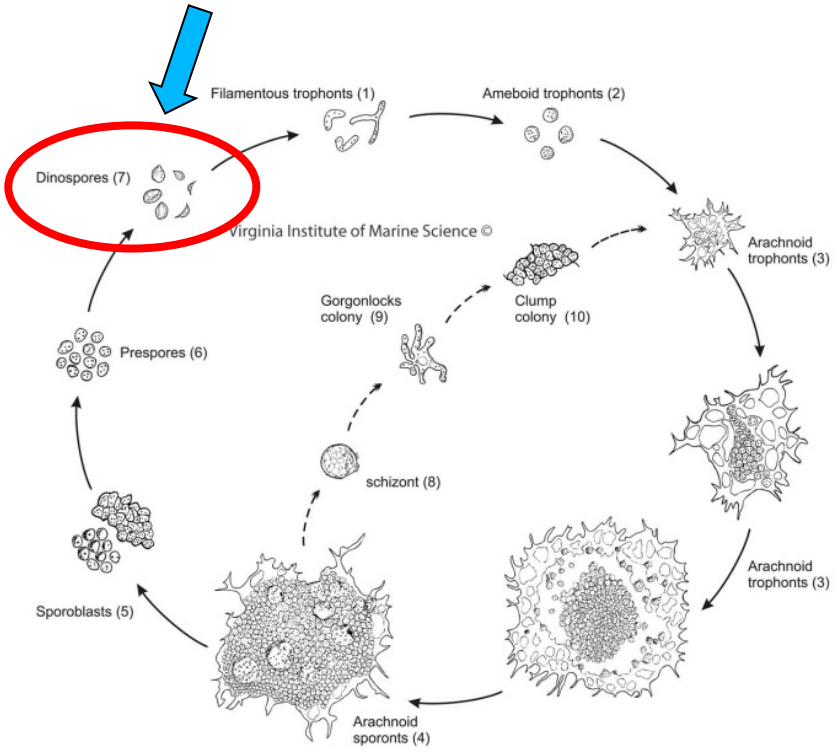
Disease and Population Structure of the blue crab in the Maryland Coastal Bays

Joe Pitula

Visualization of the *Hematodinium perezi* Life Cycle

Is this the infective stage?





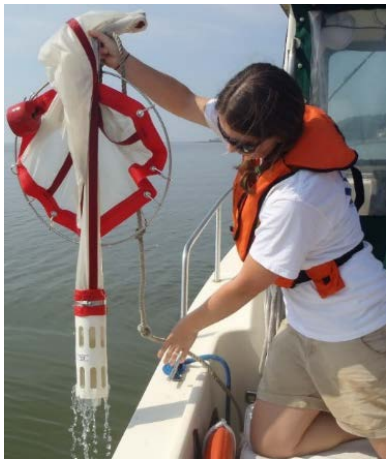
The complex life cycle of the parasitic dinoflagellate *Hematodinium*.

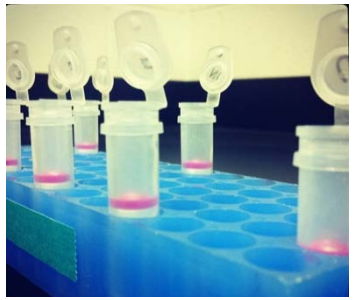
In vitro culture and developmental cycle of the parasitic dinoflagellate *Hematodinium* sp. from the blue crab *Callinectes sapidus*

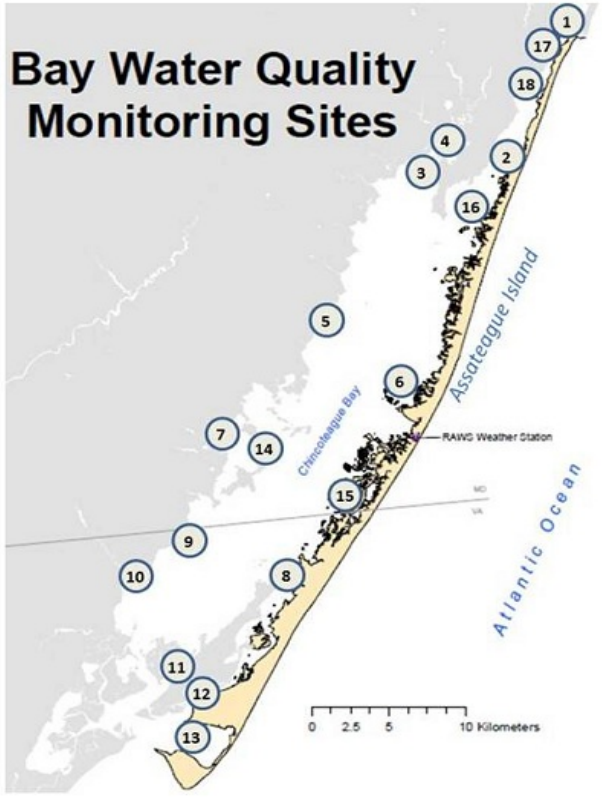
CAIWEN LI, TERRENCE L. MILLER†, HAMISH J. SMALL *and* JEFFREY D. SHIELDS*

Virginia Institute of Marine Science, School of Marine Science, The College of William and Mary, P.O. Box 1346, Gloucester Point, Virginia 23062, USA

Hematodinium perezi in the environment

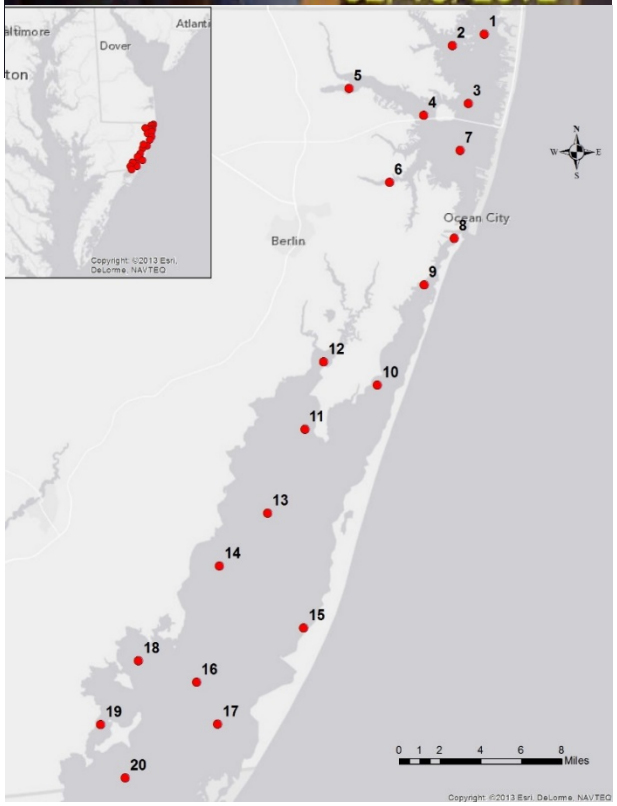




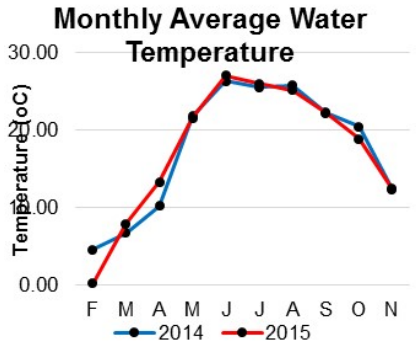


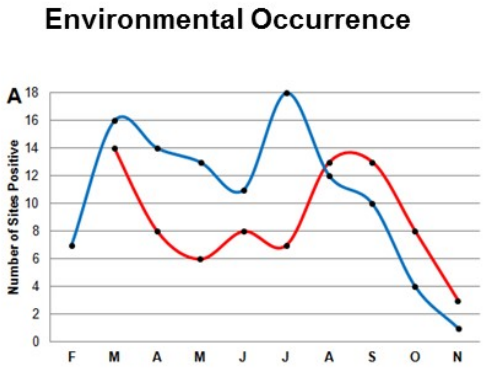
Environmental samples were collected with the National Park Service.

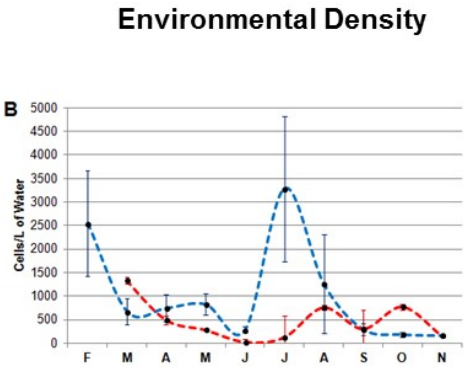
Crab samples were collected with the Maryland Department of Natural Resources.



Hematodinium in the water relative to blue crab and alternate host infections







Month	Average Cells/g	Std. Error	Total Positive	Total Sampled	Percent Infected
A	3.00 x 10^5	2.45 x 10^5	4	30	13%
M	2.08 x 10^5	7.47 x 10^4	3	22	14%
J	2.26 x 10^5	1.73 x 10^5	10	51	21%
J	2.09 x 10^5	7.37 x 10^4	7	30	23%
A	**1.50 x 10^6**	5.22 x 10^5	16	40	**40%**
S	1.89 x 10^5	9.32 x 10^4	5	49	10%
O	0	0	0	10	0%
Total	6.77 x 10^5	2.08 x 10^5	45	232	**19%**

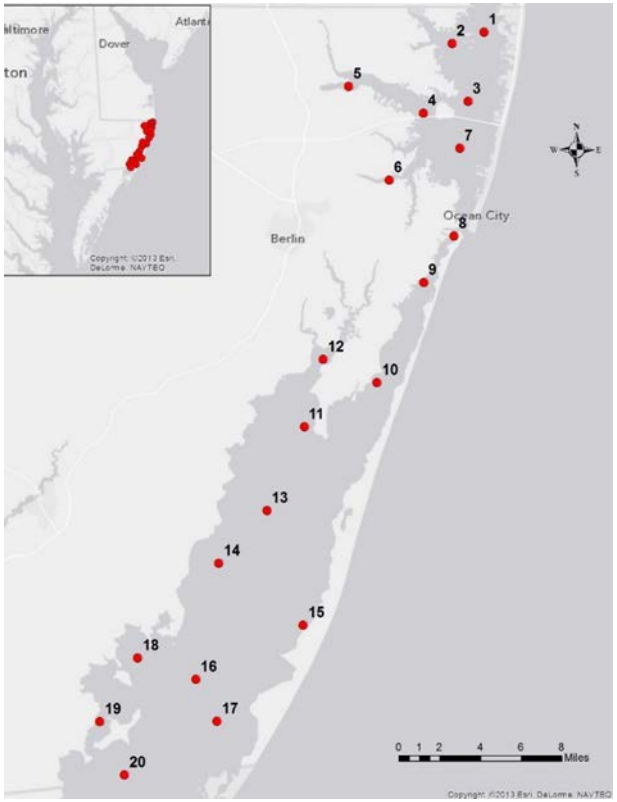
Month	Average Cells/g	Std. Error	Total Positive	Total Sampled	Percent Infected
A	1.17 x 10^5	3.1 x 10^4	27	39	**69%**
M	5.72 x 10^5	5.3 x 10^5	7	30	23%
J	1.39 x 10^5	4.3 x 10^4	32	85	38%
J	**1.02 x 10^6**	3.9 x 10^5	30	49	59%
A	**2.35 x 10^6**	1.3 x 10^6	22	33	**66%**
S	**1.91 x 10^6**	1.2 x 10^6	19	36	33%
O	2.17 x 10^5	9.2 x 10^4	9	25	35%
Total	9.07 x 10^5	2.7 x 10^5	146	297	**49%**

Sand Shrimp (*C. septemspinosa*)			
Month	Infected	Total Sampled	% Infected
A	5	6	83.3%
M	4	22	18.2%
J	4	15	26.7%

Grass Shrimp (*Palamonetes* sp.)			
Month	Infected	Total Sampled	% Infected
M	2	5	40.0%
J	2	5	40.0%
J	1	5	20.0%
A	1	11	9.1%
S	0	5	0.0%
O	0	2	0.0%

Mud Crab (*D. sayi*)			
Month	Infected	Total Sampled	% Infected
A	2	4	50.0%
M	7	7	100.0%
J	7	10	70.0%
J	8	20	40.0%
A	4	10	40.0%
S	1	2	50.0%
O	1	2	50.0%

Reproduction in the MCB



- As in Chesapeake Bay, we observe two main peaks of sponging, one in June and the other in September
- We thought that crabs in the MCB do not need to migrate, as the entire system is saline

Site	April	May	June	July	August	September	Total
T001	0	0	0	1	0	0	1
T003	0	1	6	7	4	1	19
T004	0	0	0	2	0	0	2
T007	0	0	3	8	6	0	17
T008	0	0	3	2	2	2	9
T009	0	0	13	1	5	0	19
T010	0	1	9	2	0	0	12
T011	0	1	0	0	0	0	1
T013	0	0	1	0	0	0	1
T016	3	3	0	1	0	0	7
T020	3	3	1	0	0	0	7

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Dynamics of water and salt exchange at Maryland Coastal Bays

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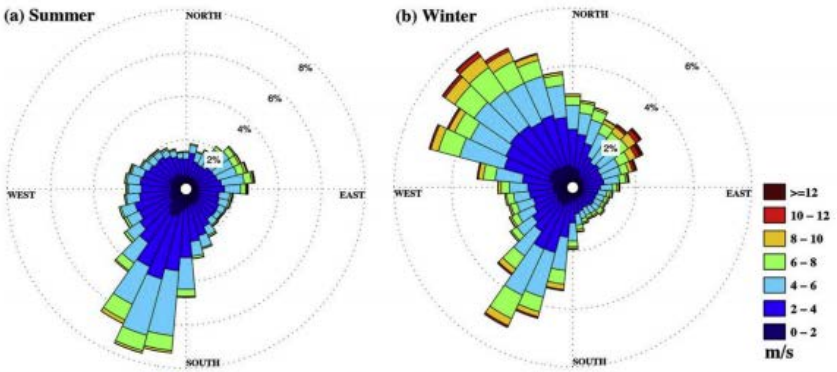
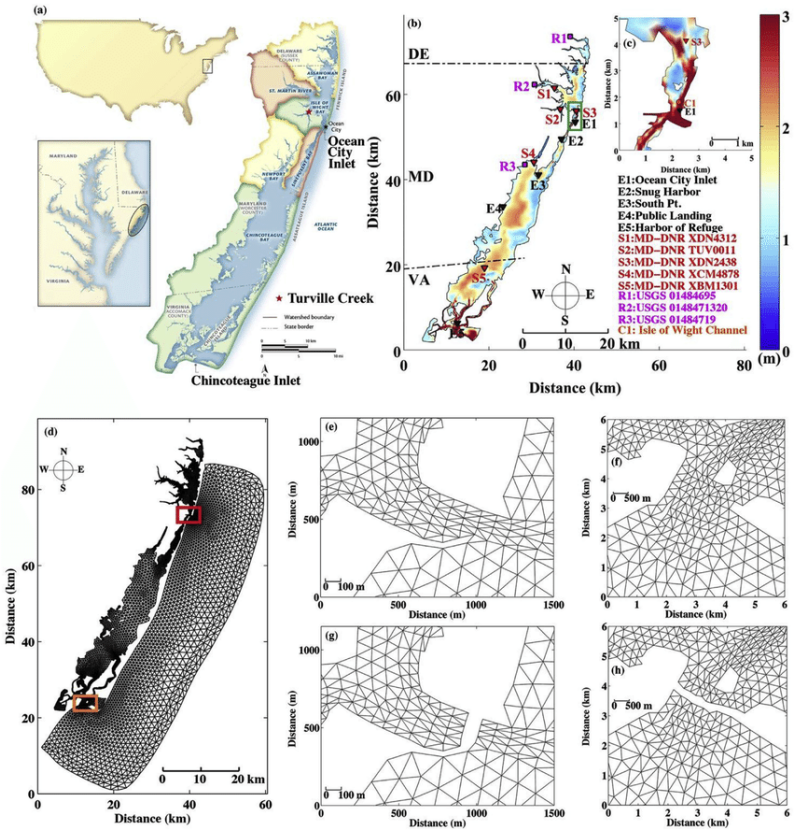
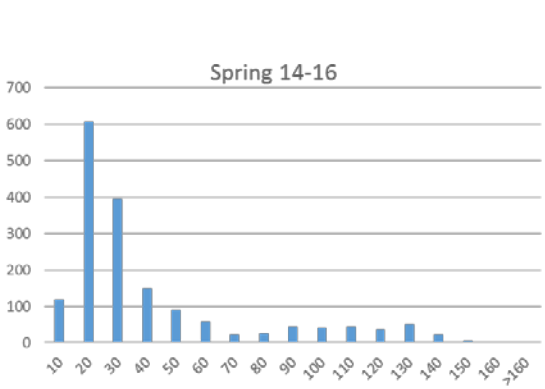
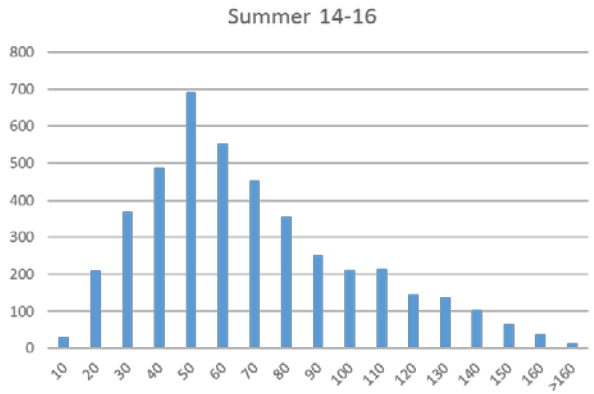
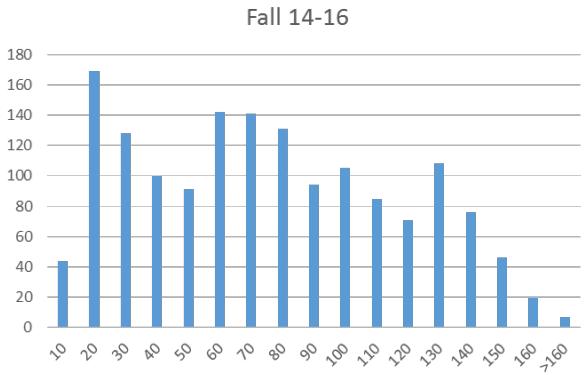


Fig. 2. Wind rose diagrams for the MCBs during (a) summer (June to August), and (b) winter (December to February) of 2003–2013. Data Source: MesoWest Data.









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MARYLAND DEPARTMENT OF NATURAL RESOURCES

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