



Spawning events in small and large populations of the green sea urchin *Strongylocentrotus droebachiensis* as recorded using fertilization assays

Gaudette, Julien, Richard A. Wahle, John H. Himmelman

Limnol. Oceanogr., 51(3), 2006, 1485-1496 | DOI: 10.4319/lo.2006.51.3.1485

ABSTRACT: During the winter and spring of 2002 and 2003, we used time-integrated fertilization assays to monitor sperm availability in three populations of the green sea urchin *Strongylocentrotus droebachiensis* in Maine: a naturally occurring population of >40,000 urchins and two smaller groups (<1,000) of transplanted urchins isolated from other aggregations. Episodes of sperm release coincided in two populations 10 km apart, suggesting that urchins were responding to a widespread environmental signal. We observed significant lunar periodicity in sperm release events for both of these populations. However, extensive spawning as shown by fertilization rates near 100% and a dramatic drop in gonad mass only occurred in the large natural population around the onset of thermal stratification and the spring phytoplankton bloom. By contrast, in the two small populations we observed low fertilization rates and little or no change in gonad mass. We speculate that a subset of males in these populations responded to a common external spawning signal, but that mass spawning is more likely to occur in large, dense populations where sperm concentrations reach high enough levels to trigger spawning in less responsive urchins.

Article Links

[Download Full-text PDF](#)

[Return to Table of Contents](#)

Please Note

Articles in L&O appear in PDF format. Open access articles may be freely downloaded by anyone. Other articles are available for download to subscribers only, or may be purchased for \$10 per article. All L&O articles are moved into Open Access after three years.

