



FIGEMA

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Locomotion versus spawning: escape responses during and after spawning in the scallop *Argopecten purpuratus*

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Abstract The energetic cost of spawning and the endogenous factors that modulate spawning could modify escape response performance, leading to a conflict between the requirements of two fundamental components of fitness: reproduction and survival. We examined whether spawning changed force production during escape responses by the functionally hermaphroditic scallop, *Argopecten purpuratus*, and whether the response of smooth (tonic) and striated (phasic) muscles differed. Force production during escape responses by mature scallops was compared before induction of spawning, during spawning and after completion of spawning. Maximum tonic force and the area under the force curve (total force recorded) were diminished during gamete release, whereas phasic force production (maximum and mean force) increased after spawning was completed. The number and frequency of phasic contractions did not change during the spawning process, suggesting that spawning did not limit fuel availability for phasic contractions. The decrease in tonic force during spawning and the increased phasic force production after spawning may

reflect changes in monoamine levels during gamete release. Whereas the spawning process modified force production during escape responses, the changes would, if anything, enhance escape performance during an initial encounter between a scallop and a predatory sea star.

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