Roped In: Exploring Effective Methods for Mussel Spat Separation

Spat losses pose a persistent challenge for the Greenshell™ industry, resulting in stagnant annual production and revenue. Extensive research has highlighted a potential solution to this problem: the implementation of a nursery system that nurtures spat to a larger size prior to seeding. However, for this approach to be economically viable, a year-round supply of single-seed spat (i.e. spat not attached to any settling substrata) is crucial.

Coastal spat farms present a promising avenue for seed supply as they can consistently provide a dependable source of high-quality spat. Nevertheless, the current obstacle lies in the inability to easily and effectively separate spat from the catching rope to obtain individuals at suitable sizes for nursery culture.

To address this issue, our research endeavors have focused on exploring innovative methods to separate spat from catching ropes by conducting experiments utilizing various protease enzymes and chlorinated water. These treatments have been designed to weaken the connective threads that spat use to attach themselves to surfaces, such as catching ropes. This should enable spat to be safely separated and remain alive following a quick wash in seawater (Figure 1)..

Our initial findings have been encouraging, demonstrating that protease enzymes or chlorination can serve as effective approaches to separate, on average, 60% of spat at sizes of 3-5mm from catching ropes without causing any increase in mortality. The second experimental round then saw up to 90% of spat removed at the size of 0.5-3mm, however, with a lower survival rate of 48%. Further enhancements in the methods employed are likely to result in a higher rate of spat separation and survival.

In summary, our research aims to address the ongoing problem of spat loss by investigating novel techniques for extracting spat from catching ropes.

The utilization of protease enzymes and chlorination has shown promise in achieving a significant separation of spat, contributing to the commercial viability of a nursery system, subsequently improving overall production efficiency. Continuous refinement of these methods is expected to yield even more favorable outcomes.

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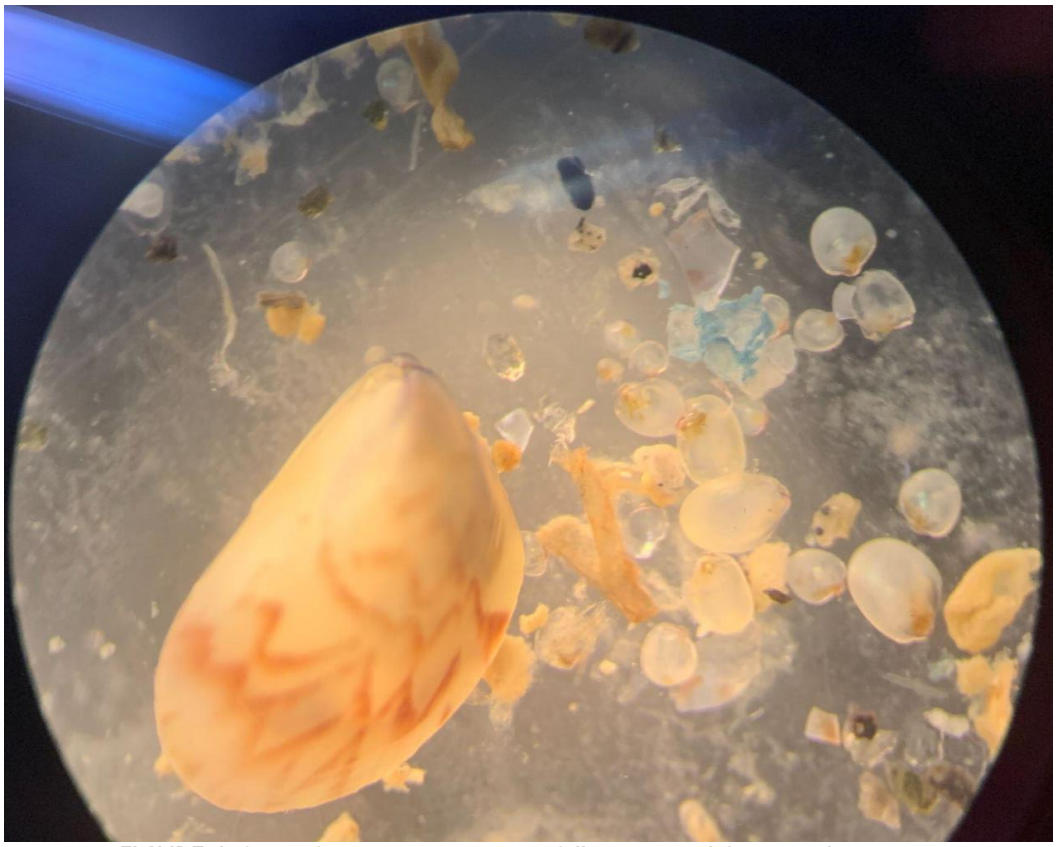

FIGURE 1: Spat of various sizes successfully separated from catching ropes.