

Restoring soft-sediment mussel beds using transplanted adult mussels

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Mussel beds are an integral part of many coastal ecosystems and provide a number of ecosystem services and functions. Loss of this important habitat has spurred efforts to restore these productive habitats in many parts of the world. Green-lipped mussel (*Perna canaliculus*) are one such species that has exhibited losses throughout its range, including the near extirpation of the vast soft-sediment beds throughout the Hauraki Gulf, New Zealand, largely due to dredge fishing. Since the closure of the fishery in 1969, there has been little evidence of recovery in these populations and efforts to restore this important habitat are currently being implemented. Several experimental mussel beds were deployed to the soft-sediment as part of a two year descriptive study. Population size, size frequency, and settlement within these beds were monitored to identify potential limitations to sustainability of restored mussel beds within the current environment of the Hauraki Gulf. Each mussel bed contained on average 20550 mussels at the initial survey and covered an average area of 33.5 metres squared. Settlement was found to occur year round within the mussel beds, however only a small amount of recruitment (average of 3 individuals per metres squared) was observed on a single survey. Across all beds, mussels showed evidence of individual growth while the population as a whole declined over each of the surveys to an average of 26% at 25 months. Although larval supply is present and recruitment occurring, it is currently of insufficient magnitude to balance the natural mortality within these beds. If we are to develop restoration strategies that will be sustainable, we will require a greater understanding of recruitment and survival of mussels in this system.