

Electrical stimulation greatly increases oyster survival in restoration projects

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Oyster reefs have suffered massive declines worldwide. New York City once had more than 900 square kilometers of oyster reefs, but now has essentially none left because of over-harvesting. Because oyster filtration is the most effective way to remove sediments, organic matter, and bacteria from coastal waters, New York City's Green Infrastructure Program is now encouraging oyster reef restoration to clean up water quality, and avoid the need for vastly more expensive water and sewage treatment plants. Oyster reef restoration efforts to date have largely failed due to very low survival of transplants. We are growing oysters in mesh bags in New York City waters with and without trickle charging from solar panels. Young oysters grown in electrical fields under various conditions had very high over-winter survival (mean 79.8%, range 69.2-100.0%) and had shiny white shells. In contrast, control oysters in the same habitat had almost complete mortality (survival 8.4%), and the shells had a red-yellow color and appeared eroded. Spat placed in the fall were 30.9±2.71 mm long. Electric oysters had clear growth over the normally dormant winter season (mean length 37.4±5.0 and 39.4±4.0 mm in two separate experiments). In contrast, control oysters shrank in length over the winter to 27.4±2.71 mm. Our results suggest that oyster reef restoration, and improvement of water quality, could be significantly sped up by establishing large oyster nurseries that are trickle charged from solar panels.



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