The Washington Shellfish initiative places great importance on the restoration of native Olympia oyster, Ostrea lurida, stocks within the Puget Sound. Restoration efforts are frequently hampered by selected stocks failing to survive or recruit after outplantation. One possible explanation of this is the phenomenon of local adaptation, where local stocks are more suited to their home environments than foreign environments. To test this hypothesis we conducted a reciprocal transplant experiment with offspring from three distinct populations of O.lurida along a latitudinal gradient within the Sound. We monitored the three populations at each site for mortality, growth, and reproductive activity for one year as well as monitoring ambient temperature via in cage temperature loggers. Upon analyzing the data, we found that the populations differed in response to their outplanted environment while no one population outcompeted the other two there were distinct adaptive advantages shown in each population. Implications for restoration are not fully understood but with further investigation better suggestions can be made for stock selection practices.