Spatial variability in growth and reproduction of the Pacific oyster *Crassostrea gigas* (Thunberg, 1793) along the west European coast

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Abstract
The Pacific oyster *Crassostrea gigas* was introduced in Europe for commercial purposes in the mid 1960s. It was initially thought that low winter temperatures would restrain this species' reproduction and settlement; however, its present distribution in areas where no introduction has taken place suggests that natural invasion and expansion has occurred. Along the European coast, wild populations of Pacific oysters are already found from northern Germany to southern Portugal. Whether *C. gigas* will continue to further expand through northern waters will depend on its physiological performance. In this study, the performance of wild oyster populations has been studied in terms of growth and reproduction at three stations: La Rochelle (France; 46ºN), Yerseke (Oosterschelde estuary, The Netherlands, 51ºN), and Texel (Wadden Sea estuary, The Netherlands, 53ºN). The French population had the lowest somatic-shell mass ratio, and an increase in maximum shell length, somatic and gonadal mass was observed from France to the Netherlands. In addition, mean oocyte diameter decreased significantly from south to north. The combination of increasing gonadal mass and decreasing oocyte volume suggests an increasing reproductive output in terms of egg numbers from France to The Netherlands. Differences in temperature between locations will at least be partly responsible for the observed patterns; however, other environmental factors (such as food availability, predation pressure, sediment type and/or seston concentration) cannot be excluded. Since smaller eggs (oocytes) are thought to have a longer development time, the environmental conditions along the Dutch coast may result in increased larval dispersal and possibly in further population expansion.