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## Using spatial statistics to infer scales of demographic connectivity between populations of the blue mussel, *Mytilus* spp.

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**ABSTRACT:** We conducted a large-scale survey of blue mussel (*Mytilus* spp.) populations and recruitment along 100 km of the Southern shore of the St. Lawrence Estuary, Quebec, Canada. By taking advantage of the residual downstream current of our study system, we used cross-covariance analysis to test the hypothesis that postrecruitment and larval supply processes result in a positive relationship between local adult abundance and recruitment. We found no evidence of within-site correlation between adults and recruits. Alternatively, we hypothesized that demographic connectivity between populations would result in a positive covariance between adult abundance and recruitment at downstream sites separated by the average dispersal distance. We observed significant positive cross-covariance between sites separated by 12-18 km and 24-30 km. These results provide the first direct quantification of demographic connectivity between adult production and larval recruitment of *Mytilus* using simple survey data. The approach developed here measures connectivity over ecological time scales, and thus may be used to monitor temporal fluctuations in dispersal patterns.

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