# Does larval advection explain latitudinal differences in recruitment across upwelling regimes? 

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Supplement. Lower and upper 95\% confidence intervals from analysis of variance (ANOVA) tests.

Table S1. Lower and (upper) 95\% confidence intervals for (A) 2-way ANOVA testing for ontogenetic differences in larval concentrations relative to distance offshore ( 2 and 9 km ) and (B) 1-way ANOVA testing whether larvae were found farther offshore during different oceanographic conditions for 9 taxa collected off Newport, Oregon, over 7 years (1998 through 2002, 2009 and 2010). The proportion of larvae collected across sites per year was used in both tests to standardize larval concentrations across years. The relative difference in abundance between the 2 sites at each sampling time was used as the response variable in the 1-way ANOVA. nc = larval stages that were not collected during the study, na = larval stages that are not applicable

| (A) |  |  |  |  |  |  |  |  |  |  |  |  |  |  | (B) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Cross-shelf distance |  | Larval stage |  |  |  | Cross-shelf distance $\times$ larval stage |  |  |  |  |  |  |  | Oceanographic condition |  |  |
|  |  |  |  |  | km |  |  | -9 k | m |  |  |  |  |
| Taxon | 2 km | 9 km |  |  |  |  | Early | Mid | Late | PL | Early | Mid | Late | PL | Early | Mid | Late | PL | Before | Up | Relax |
| Nearshore |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Balanus spp. \& Chthamalus dalli | $\begin{gathered} 0.6 \\ (0.91) \end{gathered}$ | $\begin{gathered} 0.08 \\ (0.39) \end{gathered}$ | $\begin{gathered} 0.32 \\ (0.76) \end{gathered}$ | $\begin{aligned} & 0.26 \\ & (0.7) \end{aligned}$ | $\begin{aligned} & 0.26 \\ & (0.7) \end{aligned}$ | $\begin{gathered} 0.27 \\ (0.71) \end{gathered}$ | $\begin{gathered} 0.46 \\ (1.08) \end{gathered}$ | $\begin{gathered} 0.39 \\ (1.01) \end{gathered}$ | $\begin{gathered} 0.42 \\ (1.04) \end{gathered}$ | $\begin{gathered} 0.51 \\ (1.13) \end{gathered}$ | $\begin{gathered} 0 \\ (0.62) \end{gathered}$ | $\begin{aligned} & -0.06 \\ & (0.56) \end{aligned}$ | $\begin{gathered} -0.08 \\ (0.54) \end{gathered}$ | $\begin{aligned} & -0.16 \\ & (0.46) \end{aligned}$ | $\begin{gathered} -0.09 \\ (0.01) \end{gathered}$ | $\begin{aligned} & -0.08 \\ & (0.01) \end{aligned}$ | $\begin{gathered} -0.09 \\ (-0.02) \end{gathered}$ |
| Porcellanidae | $\begin{gathered} 0.62 \\ (0.91) \end{gathered}$ | $\begin{gathered} -0.05 \\ (0.24) \end{gathered}$ | $\begin{gathered} 0.43 \\ (0.72) \end{gathered}$ | na | $\begin{gathered} 0.14 \\ (0.43) \end{gathered}$ | nc | $\begin{gathered} 0.78 \\ (1.19) \end{gathered}$ | na | $\begin{gathered} 0.34 \\ (0.75) \end{gathered}$ | nc | $\begin{gathered} -0.05 \\ (0.36) \end{gathered}$ | na | $\begin{gathered} -0.18 \\ (0.23) \end{gathered}$ | nc | $\begin{gathered} -0.34 \\ (-0.12) \end{gathered}$ | $\begin{aligned} & -0.15 \\ & (0.01) \end{aligned}$ | $\begin{gathered} -0.2 \\ (-0.002) \end{gathered}$ |
| Pinnotheridae | $\begin{gathered} 0.49 \\ (0.73) \end{gathered}$ | $\begin{gathered} 0 \\ (0.23) \end{gathered}$ | $\begin{gathered} 0.28 \\ (0.57) \end{gathered}$ | $\begin{gathered} 0.18 \\ (0.47) \end{gathered}$ | $\begin{gathered} 0.2 \\ (0.49) \end{gathered}$ | nc | $\begin{gathered} 0.52 \\ (0.93) \end{gathered}$ | $\begin{gathered} 0.38 \\ (0.79) \end{gathered}$ | $\begin{gathered} 0.33 \\ (0.73) \end{gathered}$ | nc | $\begin{gathered} -0.08 \\ (0.33) \end{gathered}$ | $\begin{aligned} & -0.13 \\ & (0.28) \end{aligned}$ | $\begin{gathered} -0.05 \\ (0.36) \end{gathered}$ | nc | $\begin{aligned} & -0.21 \\ & (-0.07) \end{aligned}$ | $\begin{gathered} -0.11 \\ (-0.01) \end{gathered}$ | $\begin{gathered} -0.06 \\ (0.07) \end{gathered}$ |
| Mid-shelf |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Neotrypaea californiensis | $\begin{gathered} 0.23 \\ (0.46) \end{gathered}$ | $\begin{gathered} 0.18 \\ (0.41) \end{gathered}$ | $\begin{gathered} 0.37 \\ (0.65) \end{gathered}$ | $\begin{gathered} 0.16 \\ (0.45) \end{gathered}$ | $\begin{gathered} 0 \\ (0.29) \end{gathered}$ | nc | $\begin{gathered} 0.44 \\ (0.84) \end{gathered}$ | $\begin{gathered} 0.1 \\ (0.5) \end{gathered}$ | $\begin{aligned} & -0.1 \\ & (0.3) \end{aligned}$ | nc | $\begin{gathered} 0.19 \\ (0.58) \end{gathered}$ | $\begin{aligned} & 0.11 \\ & (0.5) \end{aligned}$ | $\begin{gathered} -0.01 \\ (0.39) \end{gathered}$ | nc | $\begin{gathered} -0.04 \\ (0.13) \end{gathered}$ | $\begin{gathered} -0.11 \\ (0) \end{gathered}$ | $\begin{gathered} -0.1 \\ (0.04) \end{gathered}$ |
| Paguridae | $\begin{gathered} 0.25 \\ (0.38) \end{gathered}$ | $\begin{gathered} 0.06 \\ (0.19) \end{gathered}$ | $\begin{gathered} 0.19 \\ (0.38) \end{gathered}$ | $\begin{gathered} 0.32 \\ (0.51) \end{gathered}$ | $\begin{gathered} 0.02 \\ (0.21) \end{gathered}$ | $\begin{gathered} -0.04 \\ (0.15) \end{gathered}$ | $\begin{aligned} & 0.34 \\ & (0.6) \end{aligned}$ | $\begin{gathered} 0.45 \\ (0.71) \end{gathered}$ | $\begin{gathered} 0.01 \\ (0.27) \end{gathered}$ | $\begin{aligned} & -0.08 \\ & (0.19) \end{aligned}$ | $\begin{gathered} -0.03 \\ (0.23) \end{gathered}$ | $\begin{gathered} 0.12 \\ (0.38) \end{gathered}$ | $\begin{gathered} -0.04 \\ (0.22) \end{gathered}$ | $\begin{gathered} -0.08 \\ (0.19) \end{gathered}$ | $\begin{gathered} -0.07 \\ (0.003) \end{gathered}$ | $\begin{gathered} -0.06 \\ (-0.01) \end{gathered}$ | $\begin{gathered} -0.05 \\ (0.01) \end{gathered}$ |
| Pugettia spp. | $\begin{gathered} 0.04 \\ (0.12) \end{gathered}$ | $\begin{gathered} -0.02 \\ (0.06) \end{gathered}$ | $\begin{gathered} 0.02 \\ (0.12) \end{gathered}$ | na | $\begin{gathered} 0.01 \\ (0.11) \end{gathered}$ | $\begin{gathered} -0.04 \\ (0.06) \end{gathered}$ | $\begin{aligned} & 0.06 \\ & (0.2) \end{aligned}$ | na | $\begin{gathered} 0 \\ (0.14) \end{gathered}$ | $\begin{gathered} -0.04 \\ (0.1) \end{gathered}$ | $\begin{gathered} -0.05 \\ (0.09) \end{gathered}$ | na | $\begin{gathered} -0.02 \\ (0.12) \end{gathered}$ | $\begin{gathered} -0.07 \\ (0.07) \end{gathered}$ | $\begin{gathered} -0.08 \\ (0.11) \end{gathered}$ | $\begin{gathered} -0.09 \\ (0.04) \end{gathered}$ | $\begin{gathered} -0.04 \\ (0.13) \end{gathered}$ |
| Hemigrapsus spp. | $\begin{gathered} 0.06 \\ (0.14) \end{gathered}$ | $\begin{gathered} 0 \\ (0.07) \end{gathered}$ | $\begin{gathered} 0.05 \\ (0.14) \end{gathered}$ | $\begin{aligned} & 0.01 \\ & (0.1) \end{aligned}$ | $\begin{gathered} 0 \\ (0.09) \end{gathered}$ | nc | $\begin{gathered} 0.11 \\ (0.24) \end{gathered}$ | $\begin{gathered} 0.01 \\ (0.14) \end{gathered}$ | $\begin{gathered} -0.01 \\ (0.11) \end{gathered}$ | nc | $\begin{gathered} -0.04 \\ (0.09) \end{gathered}$ | $\begin{aligned} & -0.03 \\ & (0.09) \end{aligned}$ | $\begin{gathered} -0.02 \\ (0.11) \end{gathered}$ | nc | $\begin{gathered} -0.22 \\ (-0.04) \end{gathered}$ | $\begin{gathered} -0.1 \\ (0.02) \end{gathered}$ | $\begin{gathered} -0.14 \\ (0.01) \end{gathered}$ |
| Offshore |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cancer spp. | $\begin{gathered} 0.26 \\ (0.42) \end{gathered}$ | $\begin{gathered} 0.11 \\ (0.26) \end{gathered}$ | $\begin{gathered} 0.45 \\ (0.66) \end{gathered}$ | $\begin{gathered} 0.25 \\ (0.47) \end{gathered}$ | $\begin{aligned} & -0.08 \\ & (0.14) \end{aligned}$ | $\begin{gathered} 0 \\ (0.21) \end{gathered}$ | $\begin{gathered} 0.68 \\ (0.98) \end{gathered}$ | $\begin{gathered} 0.21 \\ (0.52) \end{gathered}$ | $\begin{gathered} -0.15 \\ (0.15) \end{gathered}$ | $\begin{gathered} 0.01 \\ (0.32) \end{gathered}$ | $\begin{gathered} 0.12 \\ (0.43) \end{gathered}$ | $\begin{gathered} 0.21 \\ (0.51) \end{gathered}$ | $\begin{gathered} -0.09 \\ (0.21) \end{gathered}$ | $\begin{aligned} & -0.1 \\ & (0.2) \end{aligned}$ | $\begin{gathered} -0.09 \\ (-0.004) \end{gathered}$ | $\begin{gathered} -0.06 \\ (0.005) \end{gathered}$ | $\begin{aligned} & -0.03 \\ & (0.04) \end{aligned}$ |
| Lophopanopeus bellus | $\begin{gathered} 0 \\ (0.1) \end{gathered}$ | $\begin{gathered} 0.03 \\ (0.12) \end{gathered}$ | $\begin{gathered} 0.04 \\ (0.14) \end{gathered}$ | $\begin{gathered} -0.01 \\ (0.08) \end{gathered}$ | nc | nc | $\begin{gathered} 0.03 \\ (0.17) \end{gathered}$ | $\begin{gathered} -0.07 \\ (0.06) \end{gathered}$ | nc | nc | $\begin{gathered} 0.01 \\ (0.14) \end{gathered}$ | $\begin{gathered} 0 \\ (0.14) \end{gathered}$ | nc | nc | $\begin{gathered} -0.21 \\ (0.13) \end{gathered}$ | $\begin{aligned} & -0.12 \\ & (0.12) \end{aligned}$ | $\begin{gathered} -0.15 \\ (0.14) \end{gathered}$ |

Table S2. Lower and (upper) $95 \%$ confidence intervals for 3-way ANOVA testing for ontogenetic differences in larval concentrations relative to upwelling region (Newport, Oregon, and Bodega Bay, California) and distance offshore (inner $=1$ or 2 km , outer $=4$ or 9 km ) for the 8 taxa collected at both upwelling regions in 2009. nc = larval stages that were not collected during the study, na larval stages that are not applicable

| Taxon | Region |  | Cross-shelf distance |  | Larval stage |  |  |  | Region $\times$ larval stage |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | OR | CA | Inner | Outer | Early | Mid | Late | PL | OR |  |  |  | CA |  |  |  |
|  |  |  |  |  |  |  |  |  | Early | Mid | Late | PL | Early | Mid | Late | PL |
| Balanus crenatus | $\begin{gathered} 0.22 \\ (0.84) \end{gathered}$ | $\begin{gathered} 0.44 \\ (1.23) \end{gathered}$ | $\begin{gathered} 0.63 \\ (1.37) \end{gathered}$ | $\begin{aligned} & 0.03 \\ & (0.7) \end{aligned}$ | nc | $\begin{aligned} & 0.23 \\ & (1.1) \end{aligned}$ | $\begin{gathered} 0.1 \\ (0.97) \end{gathered}$ | $\begin{gathered} 0.41 \\ (1.28) \end{gathered}$ | nc | $\begin{gathered} 0.02 \\ (1.08) \end{gathered}$ | $\begin{gathered} -0.1 \\ (0.97) \end{gathered}$ | $\begin{gathered} 0.08 \\ (1.14) \end{gathered}$ | nc | $\begin{gathered} 0.1 \\ (1.47) \end{gathered}$ | $\begin{aligned} & -0.04 \\ & (1.33) \end{aligned}$ | $\begin{gathered} 0.39 \\ (1.76) \end{gathered}$ |
| Balanus nubilus | $\begin{gathered} -0.01 \\ (0.13) \end{gathered}$ | $\begin{gathered} 0.09 \\ (0.27) \end{gathered}$ | $\begin{gathered} 0.07 \\ (0.24) \end{gathered}$ | $\begin{gathered} 0.01 \\ (0.17) \end{gathered}$ | nc | $\begin{gathered} -0.04 \\ (0.15) \end{gathered}$ | $\begin{gathered} -0.09 \\ (0.1) \end{gathered}$ | $\begin{gathered} 0.21 \\ (0.41) \end{gathered}$ | nc | $\begin{gathered} -0.05 \\ (0.19) \end{gathered}$ | $\begin{aligned} & -0.11 \\ & (0.13) \end{aligned}$ | $\begin{aligned} & -0.02 \\ & (0.22) \end{aligned}$ | nc | $\begin{aligned} & -0.12 \\ & (0.19) \end{aligned}$ | $\begin{aligned} & -0.15 \\ & (0.16) \end{aligned}$ | $\begin{gathered} 0.36 \\ (0.67) \end{gathered}$ |
| Neotrypaea californiensis | $\begin{gathered} 0.23 \\ (0.55) \end{gathered}$ | $\begin{aligned} & -0.04 \\ & (0.37) \end{aligned}$ | $\begin{gathered} 0.14 \\ (0.52) \end{gathered}$ | $\begin{aligned} & 0.05 \\ & (0.4) \end{aligned}$ | $\begin{gathered} 0.25 \\ (0.69) \end{gathered}$ | $\begin{gathered} -0.02 \\ (0.42) \end{gathered}$ | $\begin{aligned} & -0.07 \\ & (0.38) \end{aligned}$ | nc | $\begin{gathered} 0.45 \\ (0.99) \end{gathered}$ | $\begin{gathered} 0.06 \\ (0.61) \end{gathered}$ | $\begin{aligned} & -0.16 \\ & (0.39) \end{aligned}$ | nc | $\begin{gathered} -0.13 \\ (0.58) \end{gathered}$ | $\begin{aligned} & -0.28 \\ & (0.42) \end{aligned}$ | $\begin{aligned} & -0.16 \\ & (0.55) \end{aligned}$ | nc |
| Paguridae | $\begin{gathered} 0.11 \\ (0.27) \end{gathered}$ | $\begin{aligned} & -0.02 \\ & (0.18) \end{aligned}$ | $\begin{gathered} 0.13 \\ (0.32) \end{gathered}$ | $\begin{aligned} & -0.05 \\ & (0.13) \end{aligned}$ | $\begin{aligned} & 0.04 \\ & (0.3) \end{aligned}$ | $\begin{aligned} & 0.14 \\ & (0.4) \end{aligned}$ | $\begin{aligned} & -0.07 \\ & (0.19) \end{aligned}$ | $\begin{gathered} -0.1 \\ (0.16) \end{gathered}$ | $\begin{gathered} 0.05 \\ (0.37) \end{gathered}$ | $\begin{gathered} 0.24 \\ (0.56) \end{gathered}$ | $\begin{aligned} & -0.07 \\ & (0.25) \end{aligned}$ | $\begin{aligned} & -0.11 \\ & (0.21) \end{aligned}$ | $\begin{gathered} -0.07 \\ (0.34) \end{gathered}$ | $\begin{aligned} & -0.06 \\ & (0.35) \end{aligned}$ | $\begin{aligned} & -0.18 \\ & (0.23) \end{aligned}$ | $\begin{gathered} -0.2 \\ (0.21) \end{gathered}$ |
| Porcellanidae | $\begin{gathered} 0.17 \\ (0.66) \end{gathered}$ | $\begin{gathered} 0.3 \\ (0.94) \end{gathered}$ | $\begin{gathered} 0.58 \\ (1.17) \end{gathered}$ | $\begin{aligned} & -0.11 \\ & (0.43) \end{aligned}$ | $\begin{gathered} 0.32 \\ (0.89) \end{gathered}$ | na | $\begin{gathered} 0.14 \\ (0.71) \end{gathered}$ | nc | $\begin{gathered} 0.24 \\ (0.94) \end{gathered}$ | na | $\begin{gathered} -0.11 \\ (0.6) \end{gathered}$ | nc | $\begin{gathered} 0.18 \\ (1.08) \end{gathered}$ | na | $\begin{gathered} 0.15 \\ (1.05) \end{gathered}$ | nc |
| Pinnotheridae | $\begin{gathered} 0.2 \\ (0.62) \end{gathered}$ | $\begin{aligned} & 0.25 \\ & (0.8) \end{aligned}$ | $\begin{gathered} 0.56 \\ (1.06) \end{gathered}$ | $\begin{gathered} -0.11 \\ (0.35) \end{gathered}$ | 0.25 (0.74) |  | $\begin{gathered} 0.19 \\ (0.68) \end{gathered}$ | nc | 0.16 (0.76) |  | $\begin{gathered} 0.05 \\ (0.66) \end{gathered}$ | nc | 0.14 (0.91) |  | $\begin{gathered} 0.14 \\ (0.91) \end{gathered}$ | nc |
| Majidae | $\begin{gathered} 0.02 \\ (0.15) \end{gathered}$ | $\begin{aligned} & -0.04 \\ & (0.13) \end{aligned}$ | $\begin{gathered} 0.02 \\ (0.17) \end{gathered}$ | $\begin{gathered} -0.04 \\ (0.1) \end{gathered}$ | $\begin{aligned} & 0.02 \\ & (0.2) \end{aligned}$ | na | $\begin{aligned} & -0.05 \\ & (0.13) \end{aligned}$ | $\begin{gathered} -0.05 \\ (0.13) \end{gathered}$ | $\begin{gathered} 0.02 \\ (0.24) \end{gathered}$ | na | $\begin{aligned} & -0.07 \\ & (0.15) \end{aligned}$ | $\begin{aligned} & -0.03 \\ & (0.19) \end{aligned}$ | $\begin{gathered} -0.05 \\ (0.23) \end{gathered}$ | na | $\begin{gathered} -0.1 \\ (0.18) \end{gathered}$ | $\begin{gathered} -0.14 \\ (0.14) \end{gathered}$ |
| Cancer magister | $\begin{aligned} & -0.01 \\ & (0.05) \end{aligned}$ | $\begin{aligned} & -0.01 \\ & (0.06) \end{aligned}$ | $\begin{gathered} 0.00 \\ (0.07) \end{gathered}$ | $\begin{aligned} & -0.02 \\ & (0.04) \end{aligned}$ | $\begin{gathered} 0.02 \\ (0.11) \end{gathered}$ | $\begin{gathered} -0.04 \\ (0.04) \end{gathered}$ | nc | $\begin{aligned} & -0.04 \\ & (0.04) \end{aligned}$ | $\begin{gathered} 0.01 \\ (0.11) \end{gathered}$ | $\begin{gathered} -0.05 \\ (0.05) \end{gathered}$ | nc | $\begin{aligned} & -0.05 \\ & (0.06) \end{aligned}$ | $\begin{gathered} 0.00 \\ (0.13) \end{gathered}$ | $\begin{aligned} & -0.07 \\ & (0.07) \end{aligned}$ | nc | $\begin{gathered} -0.07 \\ (0.07) \end{gathered}$ |

