Supplementary material for

**The role of biofouling development in the loss of seed mussels in aquaculture**

**Paul M. South1, 2, \*, Oliver Floerl1, and Andrew G. Jeffs2**

1Cawthron Institute, 98 Halifax Street East, Nelson 7010, New Zealand

2Institute of Marine Science & School of Biological Sciences, University of Auckland, Private Bag 92019, Auckland, New Zealand

\*Corresponding author

The supplementary material is divided into two sections; the first section presents results from statistical analyses done in the study, the second section provides a list of taxa found during this study and their minimum and maximum abundances.

Section 1. PERMANOVA analyses testing for differences in (1) the retention of *Perna canaliculus*, (2, 3) taxonomic richness in Experiments 1 and 2, respectively, (4) structure of the biofouling assemblage in Experiments 1 and 2, (5, 6) the abundance of key biofouling organisms in Experiments 1 and 2, respectively.

**1.** PERMANOVAs testing for the effects of Duration of deployment (days), Site and Depth on the abundance of juvenile *P. canaliculus* in Experiments 1 & 2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Source | f/r | df | MS | *F* | p | Perms |
|  | **Experiment 1** | | | | | | |
| Sites 1 & 2 | Duration | r | **3** | **110650** | **4.82** | **0.0029** | **9949** |
|  | Site | f | 1 | 18038 | 3.85 | 0.1405 | 9860 |
|  | Depth | f | 1 | 16887 | 3.51 | 0.1512 | 9859 |
|  | Du×Si | r | 3 | 4382 | 0.19 | 0.906 | 9951 |
|  | Du×De | r | 3 | 4509 | 0.20 | 0.9038 | 9940 |
|  | Si×De | f | 1 | 33684 | 2.07 | 0.2392 | 9848 |
|  | Du×Si×De | r | 3 | 16154 | 0.70 | 0.5488 | 9955 |
|  | Residuals |  | 134 | 22959 |  |  |  |
|  |  |  |  |  |  |  |  |
| Site 1 | Duration | r | **4** | **118280** | **6.14** | **0.0001** | **9956** |
|  | Depth | f | 1 | 14497 | 0.60 | 0.4921 | 9866 |
|  | Du×De | r | 4 | 24338 | 1.26 | 0.2845 | 9947 |
|  | Residuals |  | 92 | 19270 |  |  |  |
|  | **Experiment 2** | | | | | | |
| Sites 1 & 2 | Duration | r | **2** | **1.15** | **51.65** | **0.0001** | **9944** |
|  | Site | f | 1 | 0.01 | 0.08 | 0.8177 | 9873 |
|  | Depth | f | 1 | 0.00 | 0.07 | 0.8274 | 9874 |
|  | Du×Si | r | **2** | **0.15** | **6.85** | **0.0021** | **9950** |
|  | Du×De | r | 2 | 0.04 | 1.59 | 0.2095 | 9939 |
|  | Si×De | f | 1 | 0.07 | 4.78 | 0.142 | 9867 |
|  | Du×Si×De | r | 2 | 0.01 | 0.65 | 0.5267 | 9947 |
|  | Residuals |  | 75 | 0.02 |  |  |  |
| f/r: fixed/random, *F* = *Pseudo F*, **Bold** text indicates significance at p < 0.05, | | | | | | |  |
| Perms: number of unique permutations for each factor in the analysis, | | | | | | |  |
| Log (x + 1) transformed data were used in Experiment 2. | | | | | |  |  |

**2.** PERMANOVAs testing for the effects of Duration of deployment (days), Site and Depth on taxonomic richness in Experiment 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Source | f/r | df | MS | *F* | p | perms |  | MS | *F* | p | perms |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | All taxa | | | |  | Mobile invertebrae taxa | | | |
| Sites 1 & 2 | Duration | r | 3 | **39.01** | **326.40** | **0.0001** | **9938** |  | **899.95** | **128.29** | **0.0001** | **9965** |
|  | Site | f | 1 | 0.04 | 0.17 | 0.7024 | 9867 |  | 5.00 | 0.56 | 0.5017 | 9846 |
|  | Depth | f | 1 | 0.01 | 0.02 | 0.8944 | 9856 |  | 3.02 | 0.20 | 0.6958 | 9859 |
|  | Du×Si | r | 3 | 0.21 | 1.80 | 0.1529 | 9942 |  | 8.93 | 1.27 | 0.2887 | 9946 |
|  | Du×De | r | 3 | **0.46** | **3.84** | **0.0107** | **9964** |  | 15.58 | 2.22 | 0.0894 | 9961 |
|  | Si×De | f | 1 | 0.04 | 0.45 | 0.5449 | 9854 |  | 4.29 | 35.18 | 0.0056 | 9832 |
|  | Du×Si×De | r | 3 | 0.09 | 0.76 | 0.5211 | 9954 |  | 0.01 | 0.00 | 0.9999 | 9959 |
|  | Residuals |  | 134 | 0.12 |  |  |  |  | 7.01 |  |  |  |
|  | PERMDISP |  |  |  | 1.28 | 0.32 |  |  |  | 1.73 | 0.119 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Site 1 | Duration | r | 4 | **8.48** | **466.55** | **0.0001** | **9954** |  | **16.70** | **169.44** | **0.0001** | **9944** |
|  | Depth | f | 1 | 0.01 | 0.38 | 0.5467 | 9841 |  | 0.01 | 0.10 | 0.7667 | 9850 |
|  | Du×De | r | 4 | 0.02 | 1.17 | 0.3313 | 9938 |  | 0.09 | 0.95 | 0.44 | 9947 |
|  | Residuals |  | 92 | 0.02 |  |  |  |  | 0.10 |  |  |  |
|  | PERMDISP |  |  |  | 0.93 | 0.595 |  |  |  | 1.91 | 0.113 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Algal taxa | | | |  | Sessile invertebrate taxa | | | |
| Sites 1 & 2 | Duration | r | 3 | **12.02** | **87.14** | **0.0001** | **9962** |  | **29.74** | **414.07** | **0.0001** | **9948** |
|  | Site | f | 1 | 1.41 | 7.97 | 0.0577 | 9863 |  | 0.10 | 4.13 | 0.1296 | 9868 |
|  | Depth | f | 1 | 0.23 | 1.10 | 0.3672 | 9817 |  | 0.01 | 0.05 | 0.8402 | 9868 |
|  | Du×Si | r | 3 | 0.18 | 1.28 | 0.2872 | 9961 |  | 0.02 | 0.33 | 0.8084 | 9961 |
|  | Du×De | r | 3 | 0.21 | 1.51 | 0.2213 | 9955 |  | 0.12 | 1.74 | 0.1577 | 9958 |
|  | Si×De | f | 1 | 0.00 | 0.03 | 0.8719 | 9843 |  | 0.01 | 0.05 | 0.8399 | 9868 |
|  | Du×Si×De | r | 3 | 0.07 | 0.49 | 0.6874 | 9950 |  | 0.12 | 1.64 | 0.1878 | 9953 |
|  | Residuals |  | 134 | 0.14 |  |  |  |  | 0.07 |  |  |  |
|  | PERMDISP |  |  |  | 4.59 | 0.001 |  |  |  | 2.50 | 0.015 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Site 1 | Duration | r | 4 | **13.36** | **95.68** | **0.0001** | **9954** |  | **20.16** | **359.77** | **0.0001** | **9957** |
|  | Depth | f | 1 | 0.08 | 0.46 | 0.5318 | 9840 |  | 0.01 | 0.44 | 0.5493 | 9864 |
|  | Du×De | r | 4 | 0.18 | 1.26 | 0.2835 | 9964 |  | 0.02 | 0.40 | 0.8166 | 9944 |
|  | Residuals |  | 92 | 0.14 |  |  |  |  | 0.06 |  |  |  |
|  | PERMDISP |  |  |  | 9.43 | 0.001 |  |  |  | 6.41 | 0.001 |  |
|  | f/r: fixed/random. *F* = *Pseudo-F* statistic. | | | | |  |  |  |  |  |  |  |
|  | **Bold** text indicates significant effects at p < 0.05 or 0.01 where data were heterogeneous | | | | | | | | | | |  |

**3.** PERMANOVAs testing for the effects of Duration of deployment (days), Site and Depth on taxonomic richness in Experiment 2

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Source | f/r | df | MS | *F* | p | perms |  | MS | *F* | p | perms |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | All taxa | | | |  | Mobile invertebrate taxa | | | |
| Sites 1 & 2 | Duration | r | **2** | **2962.80** | **443.97** | **0.0001** | **9952** |  | **1090** | **231.03** | **0.0001** | **9944** |
|  | Site | f | 1 | 39.33 | 0.67 | 0.4953 | 9881 |  | 4.66 | 0.19 | 0.713 | 9868 |
|  | Depth | f | 1 | 17.25 | 0.80 | 0.4632 | 9861 |  | 0.13 | 0.03 | 0.8826 | 9838 |
|  | Du×Si | r | 2 | **60.53** | **9.07** | **0.0004** | **9950** |  | **25.26** | **5.35** | **0.0063** | **9951** |
|  | Du×De | r | 2 | **22.12** | **3.32** | **0.0437** | **9947** |  | 5.37 | 1.14 | 0.331 | 9951 |
|  | Si×De | f | 1 | 1.70 | 0.17 | 0.7216 | 9875 |  | 7.44 | 1.71 | 0.3096 | 9865 |
|  | Du×Si×De | r | 2 | 9.96 | 1.49 | 0.2325 | 9945 |  | 4.34 | 0.92 | 0.4113 | 9939 |
|  | Residuals |  | 75 | 6.67 |  |  |  |  | 4.72 |  |  |  |
|  | PERMDISP |  |  |  | 1.65 | 0.189 |  |  |  | 1.66 | 0.184 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Algal taxa | | | |  | Sessile invertebrate taxa | | | |
| Sites 1 & 2 | Duration | r | **2** | **12.77** | **108.96** | **0.0001** | **9954** |  | **199.00** | **216.30** | **0.0001** | **9960** |
|  | Site | f | 1 | 1.60 | 3.27 | 0.1911 | 9870 |  | 0.00 | 0.00 | 0.9901 | 9869 |
|  | Depth | f | 1 | 0.56 | 2.73 | 0.216 | 9860 |  | 1.97 | 0.67 | 0.4945 | 9875 |
|  | Du×Si | r | 2 | 0.50 | 4.28 | 0.0177 | 9954 |  | 1.98 | 2.15 | 0.1327 | 9943 |
|  | Du×De | r | 2 | 0.21 | 1.77 | 0.1826 | 9938 |  | **2.99** | **3.25** | **0.0447** | **9949** |
|  | Si×De | f | 1 | 0.01 | 0.22 | 0.6831 | 9856 |  | 0.63 | 1.41 | 0.3471 | 9876 |
|  | Du×Si×De | r | 2 | 0.04 | 0.31 | 0.7378 | 9967 |  | 0.43 | 0.47 | 0.6273 | 9942 |
|  | Residuals |  | 75 | 0.12 |  |  |  |  | 0.92 |  |  |  |
|  | PERMDISP |  |  |  | 7.81 | 0.001 |  |  |  | 1.97 | 0.287 |  |
|  | f/r: fixed/random. *F* = *Pseudo-F* statistic. | | | | |  |  |  |  |  |  |  |
|  | **Bold** text indicates significant effects at p < 0.05 or 0.01 where data were heterogeneous | | | | | | | | | | |  |

**4.** PERMANOVAs testing for the effects of Duration of deployment (days), Site and Depth on assemblage structure in Experiments 1 and 2

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Experiment 1** | | | | | |  | **Experiment 2** | | | | |
|  | Source | f/r | df | MS | *F* | p | Perms |  | df | MS | *F* | p | Perms |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Mobile invertebrates | | | | |  | Mobile invertebrates | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Sites 1 & 2 | Duration | r | **3** | **29331** | **145.27** | **0.0001** | **9941** |  | **2** | **49985.00** | **243.81** | **0.0001** | **9941** |
|  | Site | f | 1 | 2972.8 | 2.3672 | 0.0743 | 9941 |  | **1** | **3592.30** | **2.80** | **0.035** | **9947** |
|  | Depth | f | 1 | 481.73 | 1.2877 | 0.3206 | 9959 |  | 1 | 79.90 | 0.20 | 0.9644 | 9947 |
|  | Du×Si | r | **3** | **1273.4** | **6.3067** | **0.0001** | **9940** |  | **2** | **1319.80** | **6.44** | **0.0001** | **9915** |
|  | Du×De | r | **3** | **376.97** | **1.867** | **0.0204** | **9913** |  | **2** | **412.07** | **2.01** | **0.0086** | **9926** |
|  | Si×De | f | 1 | 346.4 | 1.4635 | 0.2553 | 9952 |  | 1 | 197.13 | 0.67 | 0.7272 | 9950 |
|  | Du×Si×De | r | 3 | 237.28 | 1.1752 | 0.288 | 9913 |  | 2 | 297.29 | 1.45 | 0.1099 | 9926 |
|  | Residuals |  | 134 | 201.91 |  |  |  |  | 75 | 205.02 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Site 1 | Duration | r | **4** | **26526** | **130.12** | **0.0001** | **9934** |  |  |  |  |  |  |
|  | Depth | f | 1 | 258.96 | 0.71986 | 0.6623 | 9956 |  |  |  |  |  |  |
|  | Du×De | r | **4** | **364.14** | **1.7863** | **0.0129** | **9926** |  |  |  |  |  |  |
|  | Residuals |  | 92 | 203.85 |  |  |  |  |  |  |  |  |  |

Table 4 is continued on the next page

Table 4. continued

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Experiment 1** | | | | | |  | **Experiment 2** | | | | |
|  | Source | f/r | df | MS | *F* | p | Perms |  | df | MS | *F* | p | Perms |
|  |  |  | Algae | | | | |  | Algae | | | | |
|  | Duration | r | **2** | **43401.00** | **31.73** | **0.0001** | **9938** |  | **1** | **32529.00** | **13.27** | **0.0001** | **9929** |
| Sites 1 & 2 | Site | f | 1 | 7254.00 | 2.13 | 0.1016 | 9947 |  | 1 | 4250.90 | 1.16 | 0.4353 | 9957 |
|  | Depth | f | 1 | 7039.70 | 2.04 | 0.1123 | 9950 |  | 1 | 2773.90 | 1.08 | 0.4655 | 9961 |
|  | Du×Si | r | **2** | **3432.50** | **2.51** | **0.0021** | **9927** |  | **1** | 3662.00 | 1.49 | 0.1735 | 9921 |
|  | Du×De | r | **2** | **3492.80** | **2.55** | **0.0022** | **9919** |  | 1 | 2565.30 | 1.05 | 0.3917 | 9944 |
|  | Si×De | f | **1** | **2388.50** | **2.74** | **0.0437** | **9953** |  | 1 | 1360.00 | 0.71 | 0.6649 | 9969 |
|  | Du×Si×De | r | 2 | 862.93 | 0.63 | 0.8418 | 9922 |  | 1 | 1915.60 | 0.78 | 0.5675 | 9953 |
|  | Residuals |  | 102 | 1367.70 |  |  |  |  | 43 | 2451.50 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Sessile invertebrates | | | | |  | Sessile invertebrates | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Sites 1 & 2 | Duration | r | **2** | **60408.00** | **32.74** | **0.0001** | **9909** |  | **1** | **17061.00** | **7.28** | **0.0001** | **9930** |
|  | Site | f | 1 | 13160.00 | 2.07 | 0.0728 | 9948 |  | 1 | 10255.00 | 1.39 | 0.3456 | 9967 |
|  | Depth | f | 1 | 2454.60 | 1.41 | 0.2405 | 9941 |  | 1 | 2270.30 | 0.82 | 0.6019 | **9957** |
|  | Du×Si | r | **2** | **6417.70** | **3.48** | **0.0001** | **9906** |  | **1** | **7398.90** | **3.16** | **0.004** | 9938 |
|  | Du×De | r | 2 | 1737.90 | 0.94 | 0.5368 | 9911 |  | 1 | 2766.30 | 1.18 | 0.3056 | 9938 |
|  | Si×De | f | 1 | 2445.30 | 1.32 | 0.2766 | 9947 |  | 1 | 1702.30 | 1.41 | 0.3332 | 9956 |
|  | Du×Si×De | r | 2 | 1851.00 | 1.00 | 0.459 | 9910 |  | 1 | 1209.60 | 0.52 | 0.8132 | 9943 |
|  | Residuals |  | 102 | 1845.30 |  |  |  |  | 43 | 2343.30 |  |  |  |
| f/r = fixed/random, Perms = number of unique permutations for each factor in the analysis. | | | | | | | | | |  |  |  |  |
| **Bold** text indicates significance at p < 0.05. | | | | |  |  |  |  |  |  |  |  |  |

**5.** PERMANOVAs testing for the effects of Duration of deployment (days), Site and Depth on the abundance of key biofouling taxa in Experiment 1



**6.** PERMANOVAs testing for the effects of Duration of deployment (days), Site and Depth on the abundance of key biofouling taxa in Experiment 2

**Supplement 2.** List of taxa and their maximum, minimum and frequency of occurrence in Experiments 1 and 2 in outer Pelorus Sound. Data are pooled across sites and depths. Phylum = phyla and sub-phyla. Freq. = frequency of occurrence in percent. \**Perna canaliculus* are the crop species. Experiment 1 total = 86 taxa. Experiment 2 total = 61 taxa. UID = unidentified

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | Experiment 1 | |  |  | Experiment 2 | |  |
| Phylum | Family | Genus/species/complex | Min | Max | Freq (%) |  | Min | Max | Freq (%) |
| Annelida | Eunicidae | Eunicidae | 0 | 1 | 0.7 |  | 0 | 0 | 0.0 |
|  | Onuphidae | Onuphidae | 0 | 1 | 0.7 |  | 0 | 0 | 0.0 |
|  | Hesionidae | Hesionidae | 0 | 1 | 0.7 |  | 0 | 1 | 1.4 |
|  | Nereididae | Nereididae | 0 | 9 | 38.7 |  | 0 | 2 | 11.1 |
|  | Phyllodocidae | *Eulalia* sp. | 0 | 1 | 2.0 |  | 0 | 1 | 1.4 |
|  | Syllidae | Syllidae | 0 | 5 | 18.0 |  | 0 | 11 | 12.5 |
|  | Sabellidae | Sabellidae | 0 | 9 | 7.3 |  | 0 | 0 | 0.0 |
|  | Serpulidae | Serpulidae | 0 | 113 | 73.3 |  | 0 | 12 | 41.7 |
|  | Capitellidae | *Heteromastus filiformis* | 0 | 1 | 1.3 |  | 0 | 0 | 0.0 |
|  | Opheliidae | *Armandia maculata* | 0 | 0 | 0.0 |  | 0 | 5 | 12.5 |
|  | Magelonidae | Magelonidae | 0 | 3 | 1.3 |  | 0 | 0 | 0.0 |
|  | Cirratulidae | Cirratulidae | 0 | 0 | 0.0 |  | 0 | 2 | 1.4 |
|  | Terebellidae | Terebellidae | 0 | 8 | 10.0 |  | 0 | 2 | 4.2 |
|  |  | Polychaete larvae | 0 | 1 | 2.7 |  | 0 | 4 | 2.8 |
| Bryozoa | Watersiporidae | *Watersipora subtorquata* | 0 | 0.02 | 12.0 |  | 0 | 0.01 | 26.4 |
|  | Bugulidae | *Bugulina stolonifera* | 0 | 1.35 | 59.3 |  | 0 | 0.03 | 12.5 |
|  |  | *Bugulina flabellata* | 0 | 4.62 | 48.0 |  | 0 | 1 | 43.1 |
| Chlorophyta | Bryopsidaceae | *Bryopsis* sp. | 0 | 0.01 | 7.0 |  | 0 | 0 | 0.0 |
|  | Cladophoraceae | *Cladophora* spp. | 0 | 1 | 6.7 |  | 0 | 0.08 | 9.7 |
|  | Ulvaceae | *Ulva intestinalis* | 0 | 0.06 | 0.7 |  | 0 | 0 | 0.0 |
|  |  | *Ulva* sp. | 0 | 10.16 | 64.0 |  | 0 | 0.01 | 2.8 |
| Chordata | Tripterygiidae | *Forsterygion varium* | 0 | 2 | 4.7 |  | 0 | 1 | 1.4 |
|  | Didemnidae | *Didemnum* sp. | 0 | 0.01 | 2.7 |  | 0 | 0.01 | 1.4 |
|  |  | *Diplosoma listerianum* | 0 | 0.57 | 24.0 |  | 0 | 0.06 | 19.4 |
|  | Polyclinidae | *Aplidium phortax* | 0 | 1.72 | 20.0 |  | 0 | 2.02 | 22.2 |
|  | Cionidae | *Ciona robusta*. | 0 | 0.41 (12) | 38.0 |  | 0 | 1.06 (11) | 31.9 |
|  | Corellidae | *Corella eumyota* | 0 | 0.99 (11) | 31.3 |  | 0 | 0.01 (1) | 8.3 |
|  | Pyuridae | *Pyura pachydermatina* | 0 | 0.49 (2) | 4.0 |  | 0 | 0 | 0.0 |
|  | Styelidae | *Asterocarpa humilis* | 0 | 0.57 (13) | 31.3 |  | 0 | 0.01 (1) | 4.2 |
|  |  | *Cnemidocarpa bicornuta* | 0 | 0.01 (1) | 1.3 |  | 0 | 0 | 0.0 |
| Cnidaria | Sertulariidae | *Amphisbetia bispinosa* | 0 | 0.78 | 23.3 |  | 0 | 0.36 | 25.0 |
|  |  | *Sertularella crassiuscula* | 0 | 0.02 | 2.0 |  | 0 | 0 | 0.0 |
| Crustacea | Balanidae | *Balanus* sp. | 0 | 1 | 1.3 |  | 0 | 0 | 0.0 |
|  |  | Cyprid | 0 | 1 | 0.7 |  | 0 | 0 | 0.0 |
|  | Ampilescidae | *Ampilesca* spp. | 0 | 140 | 59.3 |  | 0 | 72 | 65.3 |
|  | Caprellidae | *Caprella* spp. | 9 | 7759 | 98.0 |  | 0 | 4924 | 98.6 |
|  | Corophiidae | *Apocorophium acutum* | 0 | 258 | 69.3 |  | 0 | 53 | 51.4 |
|  | Dexamiidae | *Paradexamine* spp. | 77 | 4813 | 98.6 |  | 0 | 496 | 98.6 |
|  | Ischyroceridae | Ischyroceridae | 66 | 16926 | 100.0 |  | 1 | 25616 | 100.0 |
|  | Lyssanasidae | *Parawaldeckia* sp. | 0 | 944 | 84.0 |  | 0 | 398 | 97.2 |
|  | Photidae | *Gammaropsis typica* | 0 | 429 | 58.7 |  | 0 | 94 | 77.8 |
|  |  | *Ampithoe* sp. | 0 | 8 | 9.3 |  | 0 | 2 | 11.1 |
|  |  | *Aora* sp. | 0 | 267 | 33.3 |  | 0 | 10 | 25.0 |
|  |  | UID amphipod (1) | 0 | 14 | 4.7 |  | 0 | 0 | 0.0 |
|  |  | UID amphipod (2) | 0 | 2 | 1.4 |  | 0 | 0 | 0.0 |
|  |  | Copepoda | 0 | 1753 | 87.3 |  | 0 | 22 | 87.5 |
|  | Hymenosomatidae | *Halicarcinus* spp. | 0 | 7 | 39.3 |  | 0 | 4 | 25.0 |
|  | Majidae | *Notomithrax minor* | 0 | 3 | 6.7 |  | 0 | 1 | 6.9 |
|  | Palaemonidae | *Palaemon affinis* | 0 | 7 | 16.7 |  | 0 | 1 | 1.4 |
|  | Pinotheridae | *Nepinnotheres novaezelandiae* | 0 | 6 | 26.0 |  | 0 | 7 | 27.8 |
|  | Porcellanidae | *Petrolisthes* | 0 | 3 | 13.3 |  | 0 | 2 | 6.9 |
|  |  | UID Zoea | 0 | 37 | 4.7 |  | 0 | 0 | 0.0 |
|  | Munnidae | Munnidae | 0 | 2 | 1.3 |  | 0 | 0 | 0.0 |
|  | Idoteidae | Idoteidae | 0 | 6 | 18.7 |  | 0 | 1 | 1.4 |
|  | Mysidae | Mysidae | 0 | 4 | 2.0 |  | 0 | 1 | 1.4 |
|  |  | Ostracoda | 0 | 20 | 47.3 |  | 0 | 11 | 48.6 |
|  | Tanaidacea | Tanaidacea | 0 | 2197 | 73.3 |  | 0 | 304 | 77.8 |
| Mollusca | Mytilidae | *Aulacomya maoriana* | 0 | 2 | 6.0 |  | 0 | 0 | 0.0 |
|  |  | *Modiolarca impacta* | 0 | 37 | 76.7 |  | 0 | 212 | 72.2 |
|  |  | *Mytilus galloprovincialis* | 1 | 842 | 100.0 |  | 6 | 398 | 100.0 |
|  |  | *Perna canaliculus\** | 51 | 968 | 100.0 |  | 83 | 937 | 100.0 |
|  |  | *Xenostrobus pulex* | 0 | 6 | 45.3 |  | 0 | 1 | 2.8 |
|  | Limidae | *Limaria orientalis* | 0 | 3 | 9.3 |  | 0 | 8 | 16.7 |
|  | Hyatellidae | *Hiatella arctica* | 0 | 30 | 67.3 |  | 0 | 12 | 50.0 |
|  | Pectinidae | Pectinidae | 0 | 3 | 18.7 |  | 0 | 27 | 50.0 |
|  |  | Bivalve (UID < 500 µm) | 0 | 5 | 31.3 |  | 0 | 12 | 40.3 |
|  | Trochidae | *Cantharidus* sp. | 0 | 1 | 2.0 |  | 0 | 2 | 5.6 |
|  |  | Gastropoda spp. (UID) | 0 | 31 | 86.7 |  | 0 | 19 | 47.2 |
|  | Ischnochitonidae | *Ischnochiton* *elongatus* | 0 | 1 | 0.7 |  | 0 | 0 | 0.0 |
|  | Mopaliidae | *Plaxiphora* *caelatus* | 0 | 1 | 0.7 |  | 0 | 0 | 0.0 |
| Nematoda |  | Nematoda | 0 | 336 | 56.7 |  | 0 | 44 | 55.6 |
| Nemertea |  | Nemertea | 0 | 11 | 4.0 |  | 0 | 1 | 16.7 |
| Ochrophyta | Scytosiphonaceae | *Colpomenia peregrina* | 0 | 1.97 | 43.3 |  | 0 | 1.03 | 33.3 |
|  |  | *Endarachne binghamiae* | 0 | 0.01 | 1.3 |  | 0 | 0 | 0.0 |
|  |  | *Petalonia fascia* | 0 | 0.08 | 3.3 |  | 0 | 0 | 0.0 |
|  |  | *Scytosiphon lomentaria* | 0 | 0.03 | 4.7 |  | 0 | 0 | 0.0 |
|  | Alariaceae | *Undaria pinnatifida* | 0 | 0.68 | 3.3 |  | 0 | 0 | 0.0 |
|  |  | Filamentous brown alga | 0 | 0.01 | 2.0 |  | 0 | 0 | 0.0 |
| Porifera | Sycettidae | *Sycon ciliatum* | 0 | 1.14 | 32.0 |  | 0 | 0.2 | 29.2 |
| Rhodophyta | Ceramiaceae | *Ceramium apiculatum* | 0 | 1.78 | 52.0 |  | 0 | 0.43 | 23.6 |
|  |  | *Ceramium* spp. | 0 | 0.26 | 10.7 |  | 0 | 0.01 | 5.6 |
|  | Dasyaceae | *Heterosiphonia* sp. | 0 | 0.11 | 1.3 |  | 0 | 0 | 0.0 |
|  | Delesseriaceae | *Myriogramme* spp. | 0 | 0.25 | 15.3 |  | 0 | 0 | 0.0 |
|  | Rhodomelaceae | *Brongiartella australis* | 0 | 0.21 | 6.7 |  | 0 | 0 | 0.0 |
|  |  | *Laurencia distichophylla* | 0 | 0.01 | 9.3 |  | 0 | 0.29 | 8.3 |
|  |  | *Polysiphonia abscissoides* | 0 | 8.65 | 63.3 |  | 0 | 1.86 | 43.1 |
|  | Lomentariaceae | *Lomentaria caespitosa* | 0 | 0.87 | 36.0 |  | 0 | 0.01 | 8.3 |
|  |  | *Lomentaria umbiculata* | 0 | 0.17 | 16.0 |  | 0 | 0.01 | 1.4 |
|  |  | Rhodophyta spp. (UID blades) | 0 | 0.17 | 6.7 |  | 0 | 0 | 0.0 |
|  | | | |  |  |  |  |  |  |
|  | | | | |  |  |  |  |  |